

Executive Summary

ES.1 Introduction/Background

The Southern California Edison Company (SCE, or “the Applicant”) filed an application (Application Number A.04-02-026) with the California Public Utilities Commission (CPUC) on February 27, 2004 for the San Onofre Nuclear Generating Station (SONGS) Steam Generator Replacement Project (Proposed Project). If approved, the Proposed Project would:

- Replace the existing original steam generators (OSGs) at SONGS Units 2 and 3;
- Establish ratemaking for recovery of the costs of replacing these generators; and
- Address other related steam generator replacement issues.

The location of the Proposed Project is shown in Figure ES-1. The Proposed Project is composed of four major phases: Replacement Steam Generator Transport; Replacement Steam Generator Staging and Preparation; Original Steam Generator Removal, Staging, and Disposal; and Replacement Steam Generator Installation and Return to Service.

SCE’s stated objectives for the Proposed Project are to:

- **Extend useful life of steam generators.** The useful life of SONGS 2 & 3 is limited by the life of the OSGs. For SONGS 2, there is a 25 percent probability that the steam generators will not be able to operate beyond the Fuel Cycle 16 refueling and maintenance outage (RFO), which may begin as early as 2009. For SONGS 3, this probability is equal to 15 percent. For both units, these probabilities accelerate after the Fuel Cycle 16 RFO.
- **Perform steam generator replacement during earliest scheduled outage.** Because of the approximate five-year lead time from SCE’s commitment to a vendor for steam generator fabrication to when the replacement steam generators are ready for installation, the earliest time that the steam generator replacement project is feasible is during Fuel Cycle 16 RFO, anticipated in 2009.
- **Ensure continued supply of low-cost power.** SCE believes that replacing the steam generators is cost-effective from a ratepayer perspective. Continued operation of SONGS 2 & 3 provides ratepayer benefits by deferring the costs of replacement base-load generation facilities and transmission system upgrades that will be required when SONGS 2 & 3 shut down.

The CPUC is the State lead agency responsible for compliance with the California Environmental Quality Act (CEQA). This ~~Draft~~ Environmental Impact Report (EIR) ~~has been~~ was prepared by the CPUC in compliance with CEQA Guidelines (14 CCR Section 15000, et al.). The Draft EIR was published on April 15, 2005 with a 45-day comment period that ended on May 31, 2005. The Final EIR consists of two volumes and includes over 1,200 pages. Volume 1 (EIR) is completely re-printed from the Draft EIR. Changes made to the Draft EIR are marked in Volume 1: inserted text is underlined and deleted text is shown in ~~strikeout~~. Both types of changes are indicated with a vertical line in the margin. Volume 2 consists of all comments on the Draft EIR and responses to comments. Over 700 pages of comments on the Draft EIR were submitted to the CPUC.

This ~~Draft~~ EIR discloses the environmental impacts expected to result from the construction and operation of SCE’s Proposed Project and mitigation measures, which, if adopted by the CPUC or other responsible agencies, could avoid or minimize significant environmental effects. In accordance with CEQA Guidelines (14 CCR Section 15121), the EIR also evaluates alternatives to the Proposed Project that could avoid or minimize significant environmental effects. This ~~Draft~~ EIR provides a comparison of the environmental effects

of the Proposed Project and the alternatives, and identifies the Environmentally Superior Alternative (14 CCR Section 15126.6 (e) (2)).

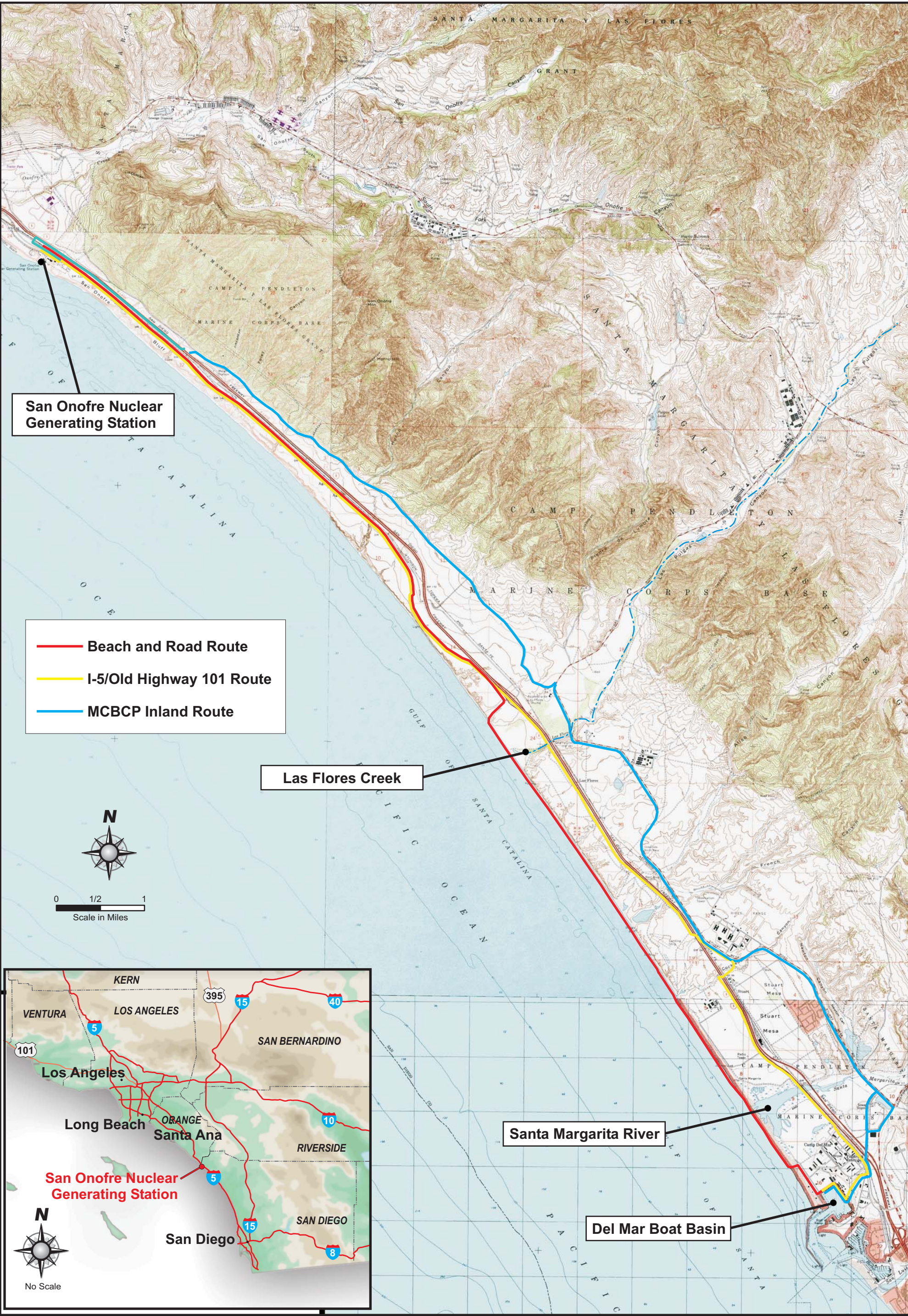
The SONGS Steam Generator Replacement Project EIR is an informational document only and does not make a recommendation regarding the approval or denial of the Proposed Project. The purpose of the EIR is to inform the public and decision-makers on the environmental setting and impacts of the Proposed Project and alternatives. The EIR will be used by the CPUC to conduct proceedings to determine whether to approve the Proposed Project. In addition to the CPUC using this EIR as part of their specific approval process, this document may also be used by Responsible Agencies as defined by CEQA Guidelines Section 15381, including the California Department of Transportation and the California Department of Parks and Recreation, as part of their respective discretionary actions and approval process. This Executive Summary provides an overview of the Proposed Project and the alternatives considered, as well as the environmental findings and mitigation measures specified in the EIR.

Changes Made to the Draft EIR. In response to comments on the Draft EIR, numerous changes have been made in the Final EIR, including revised analysis and mitigation measures. Various text sections have been modified or clarified in response to comments. In addition, 15 mitigation measures have been modified for clarity or to ensure their feasibility (see various issue areas in Section D). However, no changes were made to the overall environmental assessment methodology or to the design of the project alternatives. The following major information has been added to or revised in this Final EIR:

- Clarification of the role of the Base Commanding General at Marine Corps Base Camp Pendleton (MCBCP) as the final decision-maker for the approval process for all other project components within MCBCP. This means that implementation of the Proposed Project, the Applicant-Proposed Measures (APMs), and mitigation measures imposed by CPUC for activities within MCBCP requires approval by the Base Commanding General and is subject to additional NEPA review. Mitigation measures adopted by MCBCP on the Base would also be implemented by MCBCP, with assistance from the CPUC, if requested by the Base;
- Clarification has been provided here and in Sections B.5 and H.6 to note that APMs would be imposed as conditions of CPUC project approval. Similarly, Section D.3.6 notes that Biological Avoidance and Minimization Measures would also be imposed as conditions of CPUC project approval. As noted above, implementation of avoidance measures or mitigation measures on MCBCP would require approval by the Base Commanding General;
- Detail has been added to Section A regarding the type of approvals needed from Responsible Agencies, especially the State Department of Transportation and the State Department of Parks and Recreation;
- Clarification of mitigation measures related to biological resources has been added to Section D.3 based on comments provided by the California Department of Fish and Game.

Environmental Assessment Methodology

Environmental Baseline. Pursuant to CEQA Guidelines (Section 15125(a)), the environmental setting used to determine the impacts associated with the Proposed Project and alternatives is based on the environmental conditions that existed in the project area in October 2004 at the time the Notice of Preparation was published. The environmental baseline includes an operating nuclear power plant at SONGS, including two essentially identical nuclear reactor units, radioactive waste storage facilities, electrical transmission infrastructure, and other facilities, buildings, and systems. Included in the environmental baseline conditions are the existing NRC operating licenses for Units 2 and 3 that were approved after federal environmental review



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was conducted and allow the facility to operate until 2022. In the context of this pre-existing environment, wherein the SONGS is fully permitted to operate until the end of its NRC operating licenses, this EIR analyzes only the incremental changes that would be caused by the steam generator replacement project. These incremental changes are mainly limited to the short-term effects of steam generator replacement activities and, as a project alternative, the possible long-term presence of an OSG Storage Facility. Refer to Section 3.1 for a detailed description of the environmental assessment methodology for this ~~Draft~~ EIR.

Beyond the NRC License. This assessment does not evaluate the impacts that could occur if the SONGS facility is operated beyond the license expiration dates. Although it is true that implementation of the Proposed Project could provide an incentive for SCE to apply to extend the licenses and thus may increase, to some degree, the likelihood that SCE will apply for license extension, there are many other factors and processes that will come into play before SCE can determine whether or not to apply for license renewal. At this time SCE and the other owners of SONGS have not formally proposed to renew the licenses, and license renewal is speculative and not a reasonably foreseeable outcome of the Proposed Project.

No Project Alternative. The No Project Alternative represents a continuation of current environmental conditions, with the foreseeable closure of SONGS, forced by deterioration of the steam generators. Because the OSGs would not be replaced, they would likely need to be taken out of service sometime after approximately 2009, and SONGS 2 & 3 would be shut down before the NRC license expiration dates in 2022. The surrounding area would experience beneficial environmental effects by shutting down the routine operation of SONGS, most notably in the areas of marine biological resources and public safety. With regard to consequences of shutting down the SONGS facility, power generated by SONGS would need to be replaced by various generation and transmission solutions. For the most part, market forces and private investment decisions would dictate how and where replacement power would be provided, and the construction and operation of replacement facilities would be subject to separate environmental review and permitting processes that would need to be completed in the future. At this time, it would be remote and speculative to predict exactly how replacement power would be provided; given the wide range of possibilities, the types, sizes, number, or locations of replacement power projects that might be constructed under the No Project Alternative. Because of these limitations, the environmental assessment for the No Project Alternative does not analyze specific replacement power scenarios. The analysis discusses potential replacement power solutions in a more general manner and at a lesser level of detail than the Proposed Project.

Cumulative Impact Analysis. The cumulative impacts of the Proposed Project are also assessed. The focus in the cumulative impact analyses is to identify those project impacts that might not be significant when considered alone, but contribute to a significant impact when viewed in conjunction with future planned projects.

Preemption of State Regulation and Limited Scope of CEQA. The U.S. Nuclear Regulatory Commission is responsible for oversight and licensing of all commercial power, research, and test reactors, as well as the use of nuclear materials in the United States. The NRC has pre-emptive jurisdiction over State and local regulations regarding the use, storage, and transport of nuclear materials and protection of public safety (see Appendix 4 for a list of the applicable NRC regulations for these processes). Federal law does not permit the NRC to delegate its responsibility for regulating nuclear power plants to states. Although the CPUC has no jurisdiction to regulate or condition the Proposed Project with respect to nuclear materials handling and storage issues, including facility design, the CPUC has analyzed system and transportation safety issues to provide full disclosure of potential environmental safety impacts associated with the Proposed Project. In addition, the CPUC has identified mitigation measures to ensure public safety and/or safe work practices during project activities (for example, with regard to worker safety in the event of an earthquake). It is at the NRC's discretion to implement measures involving radiation hazards and nuclear safety for the Proposed Project.

Summary of ~~Draft~~ Final EIR Conclusions

This ~~Draft~~ EIR analyzes the environmental impacts of SCE's Proposed Project and alternatives. Analysis is presented for two alternatives to the proposed RSG transportation route and one alternative to offsite OSG disposal, along with an analysis of the No Project Alternative. As documented in detail in Section C (Alternatives), other RSG transport alternatives, including RSG offloading alternatives were considered but eliminated from detailed consideration. All potential transportation route options that were identified by the Applicant are fully analyzed as alternatives in Section C. Based on comparison of the environmental impacts of the Proposed Project and alternatives, the Environmentally Superior Alternative is identified in Table ES 1. (See Sections ES.4.3 and E.2 for further details.)

Table ES-1. Environmentally Superior Alternative

Phase	Environmentally Superior Alternative
Transportation Route Alternatives	MCBCP Inland Route Alternative
OSG Disposal Alternatives	Proposed Project (Offsite OSG Disposal)

CPUC Actions After Final EIR Publication. There is no comment period following issuance of the Final EIR. The CPUC will determine the adequacy of this Final EIR, and, if adequate, will certify the document as compliant with CEQA. The CPUC will issue a Decision on the proposed SONGS Steam Generator Replacement Project, which will be announced and published concurrent with a scheduled CPUC Meeting. The final decision is expected in October 2005. Within 30 days after the Decision is issued by the CPUC, parties can apply for rehearing.

Contents of the Executive Summary. The following sections provide a brief description of the Proposed Project and alternatives (including alternatives analyzed in detail and those eliminated from detailed consideration), a summary of environmental impacts in each environmental issue area, a summary of the comparison of alternatives, and tables listing all environmental impacts identified in the ~~Draft~~ EIR.

1.1 Proposed Project

Description of the Proposed Project

The Proposed Project would replace the original steam generators at SONGS Units 2 and 3. Each SONGS unit consists of two steam generators, for a total of four steam generators at the site, all of which would be replaced as part of the Proposed Project. The OSGs need to be replaced because they are degrading as a result of a variety of corrosion and mechanical factors associated with the original materials. The Proposed Project would enable SONGS to continue to generate power until the expiration of the current NRC licenses in 2022. The four major phases of the SONGS Steam Generator Replacement Project are as follows:

- **Replacement Steam Generator Transport** from Mitsubishi Heavy Industries, Ltd., in Japan, to the Port of Long Beach via heavy-load ship, offloading to a barge for travel to Camp Pendleton Del Mar Boat Basin, unloading from the barge, and transporting from the Camp Pendleton Del Mar Boat Basin along the beach and portions of existing roads (Beach and Road Route) to temporary enclosures within the SONGS Owner Controlled Area (OCA).
- **Replacement Steam Generator Staging and Preparation** for the removal of the OSGs and installation of the RSGs. Temporary staging facilities and areas (offices, fabrication, mock-up, weld testing and training, warehouse, and laydown areas) would be needed to support the project activities and additional project personnel. The RSGs would be staged and protected in an enclosure, which would be located within the SONGS OCA.

- **Original Steam Generator Removal, Staging, and Disposal** would involve creating an opening in each containment building above the existing equipment hatch, decontaminating the OSGs, and securing the OSGs for transport to a temporary enclosure facility within the OCA, west of Interstate Highway 5 (I-5), where the OSGs would be prepared for disposal offsite (the disposal location has not been specified at this time, but one likely destination would be Envirocare of Utah, Inc., at Clive, Utah).
- **Replacement Steam Generator Installation and Return to Service** would involve preparatory activities within the temporary enclosures and moving the RSGs from the temporary enclosures into the containment buildings. Upon completion of steam generator replacement, the opening in the containment buildings would be sealed, and the containment building would be returned to its original configuration and integrity.

Transport activities would occur entirely west of I-5, within MCBCP, except for a short stretch along I-5 to bypass Skull Canyon and a portion along Old Highway 101 through San Onofre State Beach. Construction activities associated with the Proposed Project would occur on previously developed, disturbed land within the SONGS site boundary. Upon completion of the Proposed Project, the SONGS site would be returned to approximately its existing condition; temporary staging facilities and areas would be removed after completion of the Proposed Project, and the OSGs would be taken offsite for disposal.

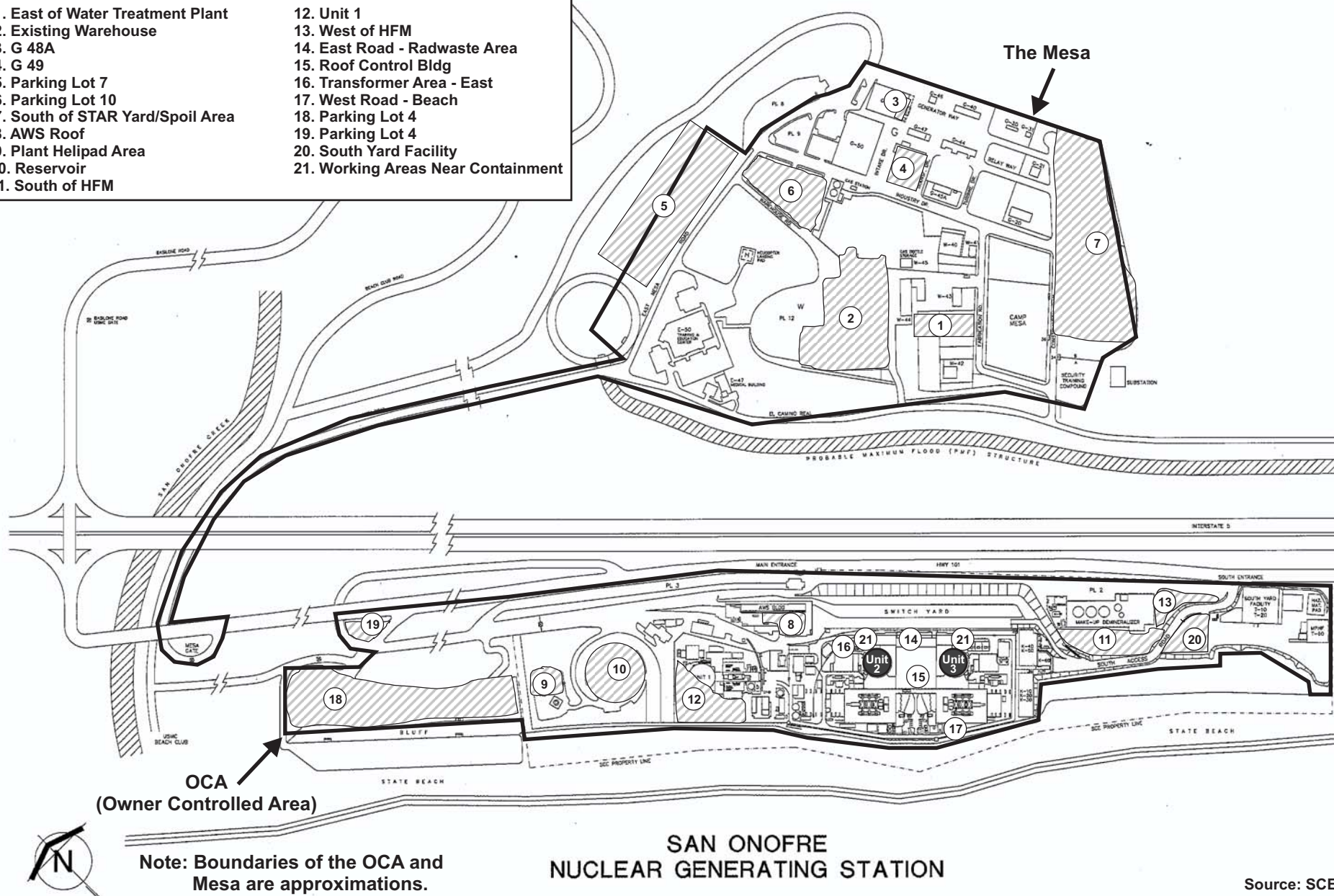
Environmental Setting of the Proposed Project

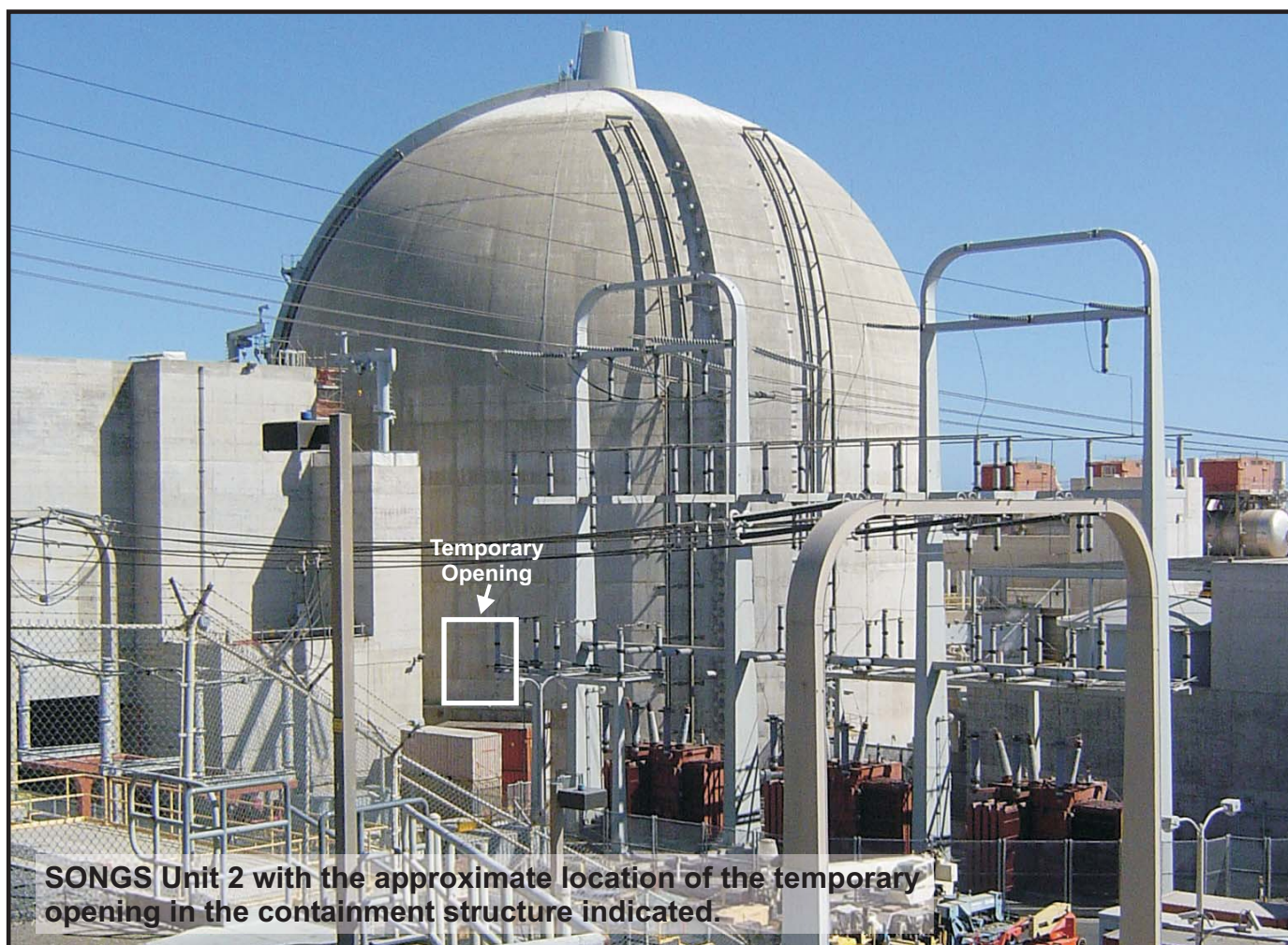
The 84-acre SONGS site is located in San Diego County, entirely within the boundaries of the MCBCP. The site is adjacent to the Pacific Ocean and San Onofre State Beach, and project-related activities would occur near military residences within MCBCP and camping facilities in San Onofre State Beach. The City of San Clemente is the nearest community, approximately four miles north of SONGS. Figure ES-1 above provides an overview of the area that would be affected by the Proposed Project, including the entire proposed transportation corridor. Figure ES-2 provides ~~the~~ a site plan of the SONGS facility, and Figure ES-3 illustrates the location of one of the openings that would be created in the containment.

SONGS and the RSG transport routes are located along the northwest trending coastal plain just west of the foothills of the Santa Margarita Mountains. The gently sloping coastal plain consists primarily of a series of marine terraces. The foothills of the Santa Margarita Mountains have been modified by erosion and dissected by numerous small drainages and several moderate sized stream channels. A steep sea cliff, the San Onofre Bluffs, occurs along the marine terrace south of SONGS and ranges in height from about 60 to 125 feet. RSG transportation presents many challenges because of the size of the RSGs and the relative inaccessibility of SONGS 2 & 3. Steam generator replacement projects have occurred at other nuclear facilities in the U.S., but normally they are accomplished with delivery to a dock area at the power plant site.

San Onofre State Beach is located northwest and southeast of the SONGS site. The State Beach provides recreational opportunities such as hiking, camping, swimming, surfing, beach access, and nature viewing. The San Onofre Bluffs campground, which has approximately 221 campsites with recreational vehicle (RV) parking along three miles of Old Highway 101, would be traversed by the proposed RSG transport route. The campground is typically closed from December 1 through March. MCBCP also maintains a number of recreational facilities at Camp Del Mar near the Camp Pendleton Del Mar Boat Basin, which are used throughout the year by active and retired military personnel and their families. Military housing is located about 6,500 feet northeast of the SONGS 2 & 3, east of I-5, and the nearest campground in San Onofre State Beach is approximately 7,000 feet south of the SONGS property line and approximately 9,000 feet from SONGS 2 & 3.

- | | |
|----------------------------------|------------------------------------|
| 1. East of Water Treatment Plant | 12. Unit 1 |
| 2. Existing Warehouse | 13. West of HFM |
| 3. G 48A | 14. East Road - Radwaste Area |
| 4. G 49 | 15. Roof Control Bldg |
| 5. Parking Lot 7 | 16. Transformer Area - East |
| 6. Parking Lot 10 | 17. West Road - Beach |
| 7. South of STAR Yard/Spoil Area | 18. Parking Lot 4 |
| 8. AWS Roof | 19. Parking Lot 4 |
| 9. Plant Helipad Area | 20. South Yard Facility |
| 10. Reservoir | 21. Working Areas Near Containment |
| 11. South of HFM | |





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Interstate Highway 5 bisects the SONGS facility, and provides the main access to the facility. The SONGS OCA is secured to prevent public traffic from entering the OCA. Roads within MCBBCP would be affected by RSG transport, but they are not public; they are operated and maintained by MCBBCP. In the vicinity of SONGS, Old Highway 101 is parallel to and west of I-5. It is no longer an active highway but is used for camping and access to San Onofre State Beach.

1.2 Summary of Public Involvement

Prior to the release of the Draft EIR in April 2005, the The CEQA process for the SONGS Steam Generator Replacement Project began with the CPUC's issuance of the Notice of Preparation (NOP) of an EIR. This act also commenced the public involvement portion of the Proposed Project.

- The CPUC issued the NOP on October 1, 2004, and distributed it to the State Clearinghouse (SCH No. 2004101008) and other federal, State, and local trustees and agencies that may be affected by the Proposed Project. The NOP was mailed to 160 addresses, including nearby residents and persons at public agencies, private organizations, and interest groups. Addressees included 16 non-government agencies and special interest groups, 95 representatives of public agencies/districts/groups, 32 private organizations, and 17 other interested or affected individuals.
- Three scoping meetings were held prior to the final selection of alternatives and the preparation of the analysis presented in this EIR. The scoping meetings were conducted at the following locations and times: October 13, 2004 at 10:30 a.m. in the Auditorium at the CPUC offices in San Francisco and October 21, 2004 at 2:00 p.m. and 7:00 p.m. at the City Council Chambers in the City of San Clemente City Hall.
- Approximately 34 individuals attended the three scoping meetings, including representatives of organizations, interest groups, and government agencies. Verbal comments were received at all three scoping meetings — a total of 17 written and 7 verbal comments were received before the close of the NOP scoping process on November 1, 2004. In December 2004, a comprehensive Scoping Report was prepared summarizing comments received from the public and various agencies and public organizations.
- An EIR Internet website, e-mail address, and telephone hotline were created to disseminate project information, post all public environmental documents (including this ~~Draft~~ EIR), and announce upcoming public meetings:
 - Visit: <http://www.cpuc.ca.gov/environment/info/aspen/sanonofre/sanonofre.htm>
 - E-mail: sanonofre@aspeneg.com, or
 - Send voice message or fax to (949) 203-6410.

Immediately upon release of the Draft EIR, an extensive notification and public involvement effort was implemented, including the following activities:

- Copies of the full Draft EIR were shipped to 108 federal, State, local, and county government agencies, school districts, non-profit organizations, 3 library repositories, and concerned members of the public. Sixty-one copies of the Executive Summary and 31 CDs with the text of the Draft EIR were also sent out, and additional copies of the Executive Summary and CD were distributed at the informational workshops in May 2005.
- An additional 36 recipients received only the Notice of Availability for the Draft EIR.
- An announcement of the publication of the Draft EIR, including the project website address and the dates and times of the two Public Informational Workshops, was printed in two area newspapers.
- Two Public Informational Workshops were held on May 12, 2005.
- The text of the Draft EIR was posted on the project website on the CPUC's Internet website.

1.3 Areas of Controversy/Public Scoping Issues

Section 1.3.1 describes major issues raised during the scoping period, and Section 1.3.2 describes major comments made on the Draft EIR.

1.3.1 Scoping Issues and Comments

A total of 17 written and 7 verbal comments were received during the scoping process from federal, State, local, and county government agencies, school districts, non-profit organizations, and concerned members of the public. In addition to private citizens, comments were received from the following organizations:

- California Earth Corps
- Coalition for Responsible and Ethical Environmental Decisions (CREED)
- Grueneich Resource Advocates (for California Energy Markets)
- Southern California Edison (SCE)

Comments were also received from the following government agencies:

- California Department of Fish and Game (CDFG)
- California Department of Transportation (Caltrans)
- City of San Clemente Planning Division
- U.S. Marine Corps

In addition, one comment letter was received from Southern California Edison Company.

The issues raised during the public scoping process are described in detail in the Scoping Report and are summarized below.

- **Purpose and Need.** A majority of comments received by members of the public and community organizations addressed the purpose and need of the Proposed Project. Many of these comments expressed opposition to the existence of SONGS and to the use of nuclear power in general. Some people stated that they preferred the shutdown of SONGS and discontinuing the use of nuclear power as a generation source in favor of the utilization of natural gas power plants, or alternative and renewable energy technologies such wind, solar, and wave power. Some comments also expressed support of the Proposed Project. It was generally understood by persons and organizations commenting that without the CPUC's approval of the Proposed Project, SONGS would continue to operate only until the existing steam generators reached the end of their operating lives.
- **Human Environment Issues and Concerns.** Nearly all of the public and government agency comments raised strong concerns regarding the potential impacts of the Proposed Project on the human environment, most often expressing concerns regarding the security of the power plant, and the overall public health and safety risks associated with the operation of SONGS. These issues were mostly concerning the potential impacts of terrorists attacks and hazardous substance exposure (either as a result of a terrorist attack or seismic activity). Other concerns dealt with transportation and traffic issues.
- **Physical Environment Issues and Concerns.** The comments from government agencies, community organizations, and private citizens expressed concerns about the potential impacts that the Proposed Project may have on the physical environment, particularly impacts to biological resources, marine resources, and recreation. In addition, concerns were raised about the geologic stability of the area and whether the Proposed Project or its associated facilities would be negatively affected in the event of an earthquake.

- **Alternatives.** Comments from private citizens and non-profit organizations suggested a variety of alternatives, including the No Project Alternative. It was suggested that the No Project Alternative would reverse the impacts on marine species, as it would allow for the recovery of near shore species, and that with the No Project Alternative, California residents would recover the access to and recreational use of shoreline that is now restricted by the SONGS exclusion area. This would include recovery and access to the barrancas in the near shore areas. Suggested alternatives to the Proposed Project included supplementing natural-gas powered electricity generation with renewable energy sources such as wind, solar, and wave power; using conservation technology as a means of reducing energy demand; and upgrading and expanding existing gas-fired generation plants to offset the power generated by SONGS.
- **Environmental Review and Decision Making Process.** Concerns regarding the scope of the project description were addressed in comments. The comments identified the extension of the operating life of SONGS and the associated cumulative impacts of long-term operations as a critical issue that should be included in the environmental review. Some comments requested that the environmental review include the long-term impacts associated with potentially enabling the plant to operate until the expiration of the NRC license in 2022 instead of 2009 or 2010, which is the period the steam generators are estimated to cease operations should the project not be approved. Issues associated with the extension of power plant life would include the disposal of additional increments of spent fuel and other waste, and the additional costs required to operate the plant beyond the life of the original steam generators. In addition, those that submitted comments identified other issues that should be included in the environmental review, such as the replacement of the primary loops, reactor vessel flanges, instrumentation and control cables and trays, containment structures, and all other replacements and rebuild requirements needed by the removal of the OSGs and installation of new steam generators.

1.3.2 Comments on the Draft EIR

A 45-day public comment period followed the issuance of the Draft EIR in April 2005. All comments received, as well as responses to each comment, are presented in Volume 2 of this Final EIR. The major issues raised in public comments are similar to those that were received during the scoping process. The issues are summarized in Section 1.3.1, Scoping Issues and Comments, above.

ES.2 Alternatives

Alternatives to SCE's Proposed Project are identified and evaluated in accordance with CEQA Guidelines. CEQA Guidelines (Section 15126.6(a)) state:

An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.

CEQA Guidelines (Section 15364) define feasibility as:

... capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Alternatives to the Proposed Project were suggested during the scoping period by the general public, developed by EIR preparers, or presented by SCE in its Proponent's Environmental Assessment (PEA) filed with its application on February 27, 2004. Alternatives include different RSG transportation routes and the consideration of onsite OSG storage. Figure ES-1 above shows the relative locations of the alternative

transportation routes. In addition, this EIR also evaluates a range of replacement power generation and transmission solutions including renewable energy technologies, demand-side management or conservation, and distributed generation under the No Project Alternative.

Alternatives to the Proposed Project were screened to determine which alternatives to carry forward for analysis in the EIR and which alternatives to eliminate from detailed consideration. The alternatives were primarily evaluated according to: (1) whether they would meet the basic project objectives; (2) whether they would be feasible considering legal, regulatory, economic, and technical constraints; and (3) whether they have the potential to substantially lessen any of the significant effects of the Proposed Project. Other factors considered, in accordance with CEQA Guidelines (Section 15126.6(f)(1)), were site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and proponent's control over alternative sites. Economic factors or costs of the alternatives (beyond economic feasibility) were not considered in the screening of alternatives since CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (Section 15126.6(b)).

The detailed results of the alternatives screening analysis are contained in Section C (Alternatives). Summary descriptions of the alternatives considered and the results of screening are provided below.

2.1 Alternatives Fully Evaluated in the EIR

The EIR preparers conducted a thorough review of the options identified in SCE's PEA, examining various environmental issues associated with each potential alternative. The EIR preparation team also conducted a reconnaissance of the project site and surrounding area. Using the information garnered from this research, the EIR preparers evaluated a range of options that may reduce potential impacts associated with the Proposed Project.

Two Inland Route Transport Options were presented by SCE in the PEA, and they have been retained for full EIR evaluation as alternatives (the I-5/Old Highway 101 Route Alternative and the MCBCP Inland Route Alternative). SCE asked the CPUC to evaluate all of the route options to provide SCE with flexibility in selecting an appropriate option. In order to fulfill the intent of the CEQA process and present a clear environmental analysis in the EIR, the CPUC evaluated the transport option preferred by SCE as the Proposed Project, described in Section B (Project Description), and retained the Inland Route Transport Options as alternatives, described in Section C.4.2 (Transportation Route Alternatives).

After detailed analysis of the project area, the EIR preparation team was not able to identify any additional RSG transport alternatives that satisfied the requirements stated in Section C.3: consistency with project objectives, feasibility, and potential to eliminate significant environmental effects. However, the EIR preparation team identified a potential alternative for onsite OSG storage, which has been carried forward for analysis.

Due to the long time horizon of two to four years between the publication of the Final EIR and the commencement of the Proposed Project, it may be necessary for SCE to initiate a different alternative than the project that may be approved by CPUC. If after the decision has been made, SCE needs to change a project component that was not approved in the decision, SCE would need to request that the CPUC evaluate the proposed changes and determine if the proposed substitution is substantially different from the project approved by the CPUC. Depending on the alternative, the CPUC would potentially need to revisit the impact analysis through the preparation of an addendum or supplemental EIR.

2.1.1 I-5/Old Highway 101 Route Alternative

Alternative Description. As an alternative to the proposed transport of the RSGs along the Beach and Road Route, specialized transporters would be used along a route that would occur almost entirely on I-5 and west of I-5, except for a 0.8-mile segment, east of I-5, on Cocklebur and Stuart Mesa Roads. The specific type of transporter would be determined in the future. The range of transporters, either a self-propelled or towed system, would use rubber tires. In any case, the transporter's size and load capability would be within industry standard design specifications to transport the load over the selected route safely. It is expected that a Caltrans-approved transporter would be used for transport of the RSG on I-5. Other methods of transport operations would be similar to those for the Proposed Project.

Rationale for Full Analysis. This alternative meets all the project objectives, while reducing potential impacts to sensitive biological resources along the shoreline, and it is considered feasible because no legal, regulatory, or technical constraints were identified by the Applicant's analysis and an evaluation of the route conducted by the EIR preparers.

2.1.2 MCBCP Inland Route Alternative

Alternative Description. As a second alternative to the proposed transport of the RSGs along the Beach and Road Route, specialized transporters would be used along a route that would occur east and west of I-5 and on I-5, with most of the route on roads in MCBCP. No segments of the MCBCP Inland Route would occur in San Onofre State Beach. Other aspects of schedule and transport equipment would be similar to that for the I-5/Old Highway 101 Route Alternative above.

Rationale for Full Analysis. This alternative meets all the project objectives, while avoiding potential impacts to sensitive biological resources along the shoreline, reducing traffic disruption along I-5, and avoiding recreational impacts to San Onofre State Beach. This route is considered feasible because no legal, regulatory, or technical constraints were identified by the Applicant's analysis and an evaluation of the route conducted by the EIR preparers.

2.1.3 Original Steam Generator Onsite Storage Alternative

Alternative Description. This alternative would involve onsite storage of the OSGs and deferring disposal until the time of decommissioning SONGS 2 & 3 as an alternative to the proposed offsite disposal. This approach would be similar to the storage methodology proposed by Pacific Gas and Electric Company (PG&E) for the Steam Generator Replacement Project at Diablo Canyon Power Plant (DCPP) and that followed by most other plants replacing steam generators (e.g., Palo Verde, Oconee, Calvert Cliffs, and Sequoyah).

Under the OSG Onsite Storage Alternative, the long-term storage of the four OSGs would occur on the SONGS site in a suitable onsite enclosure designed to meet all applicable regulatory requirements. The OSG Onsite Storage Alternative includes the siting and construction of an OSG Storage Facility for the containment of hazardous materials (low level radioactive waste) during long-term storage, as well as the transport of the OSGs from the SONGS 2 & 3 containment buildings to the onsite OSG Storage Facility. SCE has not identified a potential site for an OSG Storage Facility on the SONGS site. However, the two general areas identified by the EIR preparers are in the general vicinity of the decommissioned Unit 1 and in the Mesa area east of I-5 (see Figure ES-2 above). Use of a site in the Mesa area would involve transport of the dismantled OSGs by truck along existing roadways from SONGS 2 & 3 to the OSG Storage Facility constructed in the Mesa area. Various constraints, such as availability of adequate space for the facility at specific locations, potential for interference with routine facility operations, and the need to ensure

adequate security, would influence the selection of a specific site within either of these two general locations.

Rationale for Full Analysis. This alternative is feasible, and provides a viable alternative to offsite disposal. However, this alternative would potentially increase community members' concerns regarding radiological exposure due to natural or human-caused catastrophic accidents. Because this alternative meets the project objectives and no legal, regulatory, or technical constraints were identified, this alternative has been evaluated in the EIR.

2.1.4 No Project Alternative

In addition to the alternatives described above, this ~~Draft~~ EIR evaluates the No Project Alternative, in accordance with CEQA requirements. CEQA Guidelines (Section 15126.6(e)) state that the No Project Alternative must consider the conditions at the time of the Notice of Preparation (i.e., baseline environmental conditions) and the events or actions that would be reasonably expected to occur in the foreseeable future if the project were not approved. Under the No Project Alternative the OSGs in SONGS 2 & 3 would not be replaced, and they would continue to degrade. Under the No Project Alternative the OSGs would continue to operate through 2009, after which point the steam generators would be shut down and SONGS 2 & 3 would no longer be available for electricity generation.

By causing early shutdown of SONGS, the No Project Alternative would result in the loss of approximately 2,150 MW of base-load system generation capacity. Power generated by SONGS would need to be replaced and the State's transmission system would need to be modified. It is assumed that SCE would need to take an integrated approach to procure 2,150 MW of replacement power for its customers before 2009. An integrated approach to replace lost generation caused by the shutdown of SONGS would involve the following components.

Replacement Generation Facilities

Natural gas provides the fuel for most new power generation facilities. As stated in the California Energy Commission's 2003 Integrated Energy Policy Report, it is anticipated that environmental and safety concerns are likely to preclude the addition of new nuclear, hydroelectric, or coal- and oil-fired generation as replacement power for SONGS. Section C.6.2 provides an analysis of these replacement generation facilities with their potential environmental impacts being noted in the subsequent sections.

SCE has stated in its PEA that it would need to design, permit, and construct several combined cycle natural gas turbine power plants somewhere in southern California or Arizona to replace the output of SONGS under the No Project Alternative (if SONGS output were replaced exclusively with combined cycle gas turbine power plants, as many as four to five plants could need to be constructed [2,150 MW at 500 MW per plant]). The capital costs and energy requirements of using natural gas fired combined cycle power plant are described in Section C.6.1. The natural gas would need to be delivered through a pipeline system that can support the level of natural gas needed for a base-load power plant. Each new power plant would also require new transmission lines, as well as new or upgraded substations.

Replacement Transmission Facilities

Any large scale replacement generation facilities would need to connect to the SCE and San Diego Gas & Electric (SDG&E) transmission grid. Alternatively, new transmission facilities could be used as a substitute for in-State generation by improving access to generation in surrounding states. Shutdown of SONGS would likely cause segments of the ~~500-230~~ kV transmission system connected to SONGS to become stressed and cause substantial changes in power flow patterns on the wider regional 230 kV and 500 kV transmission

system. ~~This obsolete, which~~ would necessitate significant reconfiguration and/or upgrade of the transmission grid in the SONGS area and wider southern California region.

Developing new transmission facilities requires roughly ten years of advance planning. Because of the difficulty of securing new rights-of-way, replacement transmission facilities would likely follow existing major paths.

Delivering an increment of 500 MW to customers would require a transmission line of approximately 230 kV or higher, which in turn necessitates large or substantially expanded rights-of-way. Transmission projects create two general categories of environmental impacts: short-term impacts during construction and long-term impacts that remain during operation of the transmission line.

Alternative Energy Technologies

The No Project Alternative also addressed the principal renewable and other alternative electricity generation technologies that do not burn fossil fuels as a means of providing replacement generation. These alternative technologies include solar thermal, photovoltaics, wind, geothermal, hydropower, fuel cells, and biomass. The technologies do not rely on a finite supply of fossil fuel, consume little water, and generate either zero or reduced levels of air pollutants and hazardous wastes. These technologies do, however, cause environmental impacts, and they also have technical feasibility limitations. High costs and, in some cases, limited dispatchability inhibit their market penetration. The ability of each of the seven alternative energy technologies to provide replacement power is summarized in Section C.6.3.

2.2 Alternatives Evaluated and Eliminated

The alternatives summarized below were evaluated for their potential to meet CEQA requirements, but were ultimately eliminated from consideration in the EIR. A more detailed description of each alternative and the rationale for its consideration and elimination is presented in Section C.5 of this EIR.

2.2.1 Replacement Steam Generator Transport Alternatives

Alternative Description. Various alternative routes and transport methods for the RSGs were considered, including: transport by rail, transport by highway, a Skull Canyon option, and beach landing options. Transport by rail or highway would involve use of specialized transport equipment on existing railroad or highway infrastructure with modifications in some areas for improved clearance or weight load capacity. These alternatives could avoid the need to offload the RSGs at the MCBCP Del Mar Boat Basin. The Skull Canyon option would involve transport along the beach (as under the proposed Beach and Road Route) with improvements to an existing dirt road to accommodate the RSG transport vehicle through Skull Canyon and avoid the need for transport on I-5. Beach landing options for offloading would involve installation of temporary barge landing facilities at the shore along the northern portion of the proposed Beach and Road Route to provide an alternative to offloading at the Del Mar Boat Basin.

Rationale for Elimination. Potential transport alternatives had various technical reasons for elimination from full EIR consideration, primarily due to the specific engineering requirements for transporting the oversized and heavy pieces of equipment. These requirements limited the availability of transport alternatives. Transporting the RSGs by railroad or highway would be constrained by limited access to spurs, weight load limitations, and clearance interferences. Rationale for elimination of these alternatives include increased environmental impacts due to modifications that would be needed for bridge crossings, overpasses, roads, or the shore and an otherwise failure to reduce the environmental impacts associated with the Proposed Project. These transport alternatives could create potentially significant impacts on habitat or the

marine environment that could be avoided by the Proposed Project. Therefore, these alternatives were not carried forward for full analysis in this EIR. See Section C.5.2 of this ~~Draft~~ EIR for further details.

2.2.2 Replacement Steam Generator Offloading Alternatives

Alternative Description. Alternative offloading locations within the MCBCP Del Mar Boat Basin, the Oceanside Harbor, and the Dana Point Harbor were considered. Alternative offloading locations within the boat basin would include use of existing bulkheads and docks other than the bulkhead at the north-western corner of the boat basin. Potentially feasible locations for offloading at Oceanside Harbor and the Dana Point Harbor could necessitate improvements to the harbors and transport of the RSGs on public roads with limited clearances.

Rationale for Elimination. Potential offloading alternatives had various technical reasons for elimination from full EIR consideration, including the need for improvements or modifications to be installed to accommodate RSG offloading, potential damage to shoreline protection, clearance interferences including low overpasses, and increased activity on public roads that would disrupt recreation and other harbor operations. Because none of the potential offloading alternative locations reduced the environmental impacts associated with the Proposed Project, they were not carried forward for full analysis in this EIR. See Section C.5.3 of this ~~Draft~~ EIR for further details.

ES.3 Environmental Impacts and Mitigation Measures

The analysis of environmental impacts is based upon the environmental setting applicable to each resource/issue and the manner in which the construction, operation, and maintenance of the Proposed Project or alternatives would affect the environmental setting and related resource conditions. The impact assessment methodology also considers the following three topics: (1) the regulatory setting, and evaluates whether the Proposed Project or alternatives would be consistent with adopted federal, State, and local regulations and guidelines, (2) growth-inducing impacts, and (3) cumulative impacts. Regulatory compliance issues are discussed in each resource/issue area section. This ~~Draft~~ EIR document is organized according to the following major issue area categories:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology, Soils, and Paleontology
- Hazardous Materials
- Hydrology and Water Quality
- Land Use, Recreation, and Military Operations
- Noise and Vibration
- Public Services and Utilities
- Socioeconomics
- System and Transportation Safety
- Traffic and Circulation
- Visual Resources

In order to provide for a comprehensive and systematic evaluation of potential environmental consequences to the resource/issue areas, the environmental impact assessments for the Proposed Project and alternatives are based upon a classification system, with the following four associated definitions:

- Class I: Significant impact; cannot be mitigated to a level that is not significant.
- Class II: Significant impact; can be mitigated to a level that is not significant.
- Class III: Adverse impact, less than significant.
- Class IV: Beneficial impact.

This EIR describes feasible mitigation measures that could minimize significant adverse impacts (CEQA Guidelines Section 15226.4). Within each issue area, mitigation measures are recommended where environmental effects could be substantially minimized. The mitigation measures recommended by this study have been identified in the impact assessment sections of the EIR and are presented in Mitigation Monitoring Program tables at the end of the analysis for each resource/issue area.

The major findings of the EIR analysis are summarized below according to resource issue area. Regulatory issues pertinent to each resource are identified, along with a summary of the primary impacts that would be expected from the construction and operation of the Proposed Project. Comparative effects of the alternatives are also provided. Impact findings and mitigation measures for the Proposed Project and alternatives are summarized in Tables ES-4 and ES-5, at the end of this Executive Summary.

3.1 Environmental Assessment Methodology

3.1.1 Environmental Baseline

Pursuant to CEQA Guidelines (Section 15125(a)), the environmental setting used to determine the impacts associated with the Proposed Project and alternatives is based on the environmental conditions that existed in the project area in October 2004 at the time the Notice of Preparation was published.

The environmental baseline includes an operating nuclear power plant at SONGS, including two essentially identical nuclear reactor units, turbine generators, electrical transmission infrastructure, and related facilities, buildings, and systems. Included in the environmental baseline conditions are the existing NRC operating licenses for Units 2 and 3 that allow the facility to operate until 2022. These licenses were approved after a federal environmental review was conducted that included an analysis of the potential environmental impacts associated with the operation of SONGS Units 2 and 3 through the end of the licensing periods. The baseline, therefore, includes any potential environmental effects of operating the nuclear power plant through the end of the NRC licenses, including the time period between when the OSGs would be expected to reach the NRC-mandated plugging limit as early as 2009, if not replaced with the Proposed Project, and the end of the NRC operating licenses in 2022.

Comments received during the Scoping Period, following the publication of the Notice of Preparation, pointed out that routine operation of the nuclear power plant affects the existing environment. These environmental effects have been previously reviewed and approved by the NRC and predecessor and cooperating agencies prior to and at periodic intervals over the life of the licenses.¹

In the context of this pre-existing environment, wherein the SONGS is fully permitted to operate until the end of its NRC operating licenses, this EIR analyzes only the incremental changes that would be caused

¹ The U.S. Atomic Energy Commission (the precursor to the NRC) conducted an environmental review under NEPA for SONGS when originally licensed. In March 1973, the NRC published the "Final Environmental Statement related to the proposed San Onofre Nuclear Generating Station, Units 2 and 3." The NRC issued a Final Environmental Statement related to the operation of Units 2 and 3, NUREG-0490, in April 1981 pursuant to the requirements of NEPA and 10 CFR 51. This document addressed potential environmental impacts from construction and operation of Units 2 and 3. On February 24, 2000, the NRC published an Environmental Assessment and Finding of No Significant Impact in 65 FR 9301-9303. The NRC assessed the potential environmental impacts from allowing SCE to recapture the construction period and to operate SONGS 2 and 3 until 2022 and concluded that there were no new or un-reviewed environmental impacts (SCE, 2004b).

In addition, SCE received CEQA clearance for storage of mixed waste (hazardous and radioactive) in 1989, 1999, and 2002. SCE also requested and received a CEQA Thermal Plan Exemption to allow Units 2 and 3 to increase the allowable temperature difference between intake and discharge cooling water to 25°F (SCE, 2004b).

by the proposed steam generator replacement project. These incremental changes are mainly limited to the short-term effects of steam generator replacement activities. The existence of the operating nuclear power plant through the NRC-authorized license period and its ongoing effects on aesthetics, marine biological resources, public safety, etc., are not a consequence of the Proposed Project. However, as discussed in Section 3.1.3 below, this EIR's analysis of the No Project Alternative does provide comparative data concerning effects to these resources if SONGS were not to operate between as early as 2009 and the end of the NRC operating licenses in 2022.

3.1.2 Beyond the NRC License

This assessment does not evaluate the impacts that could occur if the SONGS facility is operated beyond the license expiration dates. SCE has not formally proposed to renew the licenses, nor is license renewal a reasonably foreseeable outcome of the Proposed Project. While it is true that implementation of the Proposed Project could provide an incentive for SCE to apply to extend the licenses and thus may increase, to some degree, the likelihood that SCE will apply for license extension, there are many other factors and processes that will come into play before SCE decides whether or not to apply for license renewal. In a response to a data request from the CPUC, SCE has stated that it currently has no plans to apply to the NRC for renewal of the operating licenses at SONGS (SCE, 2004a). However, SCE has investigated the information, analysis, and regulatory procedures that would need to be fulfilled prior to filing an application for license renewal. If SCE did eventually choose to seek license renewal for SONGS, such a renewal would allow the facility to operate and generate power for an additional 20 years beyond the original 40-year operating licensing terms for each unit, both of which expire in 2022. If SCE does decide to apply to the NRC for license renewal, then the federal environmental (10 CFR 51) and safety analyses (10 CFR 54) and associated public involvement would be undertaken before the NRC could reach a decision on whether to extend the licenses. At this point, therefore, license renewal is remote and speculative and need not be considered in this document. License renewal is not a reasonably foreseeable consequence of the Proposed Project given the feasibility, analytical, and regulatory hurdles to license renewal. In addition, NRC license renewal is not considered to be a cumulative project because the formal NRC license renewal application process has not been initiated. As mentioned above in Section 3.1.1, this EIR analyzes the incremental changes of the Proposed Project, which are limited to short-term effects of steam generator replacement activities.

Nonetheless, a separate section describing the NRC license renewal process is provided in Section G of this EIR, for informational purposes only. The discussion identifies the license renewal process timeframe and the NRC environmental and engineering/safety review that would accompany the renewal process. The NRC environmental review conducted according to 10 CFR 51 involves a Generic Environmental Impact Statement (GEIS) that assesses the potential environmental impacts of license renewal. This review would conform with the requirements of NEPA by providing full evaluation of the environmental effects of continued operation of the nuclear power plant. A CEQA process may also occur at that time if the license renewal triggers any discretionary State or local approvals, such as ratemaking decisions by the CPUC. As stated in Section G.1 of the ~~Draft~~ EIR, SCE currently has no plans to apply to the NRC for renewal of the operating licenses at SONGS; however, SCE has taken preliminary steps toward gathering the information that would be needed to consider license renewal for SONGS. See Section G for further details on NRC license renewal procedures and SCE's position on NRC license renewal.

3.1.3 No Project Alternative

The No Project Alternative represents a continuation of current environmental conditions, with the foreseeable closure of SONGS, forced by deterioration of the steam generators. Because the original steam generators would not be replaced under the No Project Alternative, they would likely need to be taken out of service as early as 2009, and SONGS would be shut down before the NRC license expiration date. The surrounding area would experience certain beneficial environmental effects by shutting down the routine

operation of SONGS, most notably in the areas of marine biological resources, public safety, and traffic and circulation.

With regard to consequences of shutting down the SONGS facility, power generated by SONGS would need to be replaced and modifications to the state-wide transmission system would be needed. A range of replacement generation (including renewable energy sources and demand-side management or conservation) and transmission solutions are considered. The No Project Alternative is described fully in Section C.6 of the ~~Draft~~ EIR.

This environmental assessment does not analyze any specific scenarios for providing replacement power-generating capacity or transmission system upgrades. For the most part, market forces and private investment decisions would dictate how and where replacement power would be provided. Construction and operation of replacement facilities would also be subject to separate permitting processes and environmental review that would need to be completed in the future. It would be unduly remote and speculative to forecast exactly how any replacement power would be provided; given the wide range of possibilities, the types, sizes, number, or locations of replacement power projects that might be constructed under the No Project Alternative cannot be predicted. Therefore, the environmental consequences of the No Project Alternative are discussed in a general manner, given that a detailed analysis of specific power plant or transmission projects would not be possible or meaningful. Because of these limitations, the analysis for the No Project Alternative is at a lesser level of detail than the Proposed Project.

3.1.4 Cumulative Impacts

The cumulative impacts of the Proposed Project are also assessed. The focus in the cumulative impact analyses is to identify those project impacts that might not be significant when considered alone, but contribute to a significant impact when viewed in conjunction with future planned projects (listed in Section F of the ~~Draft~~ EIR).

3.1.5 Preemption of State Regulation and Limited Scope of CEQA

As described in Section A of the ~~Draft~~ EIR, regulation of SONGS by the CPUC is limited by federal laws and regulations governing atomic and nuclear energy. A power plant that uses radioisotopes in the production of energy is required to comply with the federal Atomic Energy Act (42 U.S.C. Section 2011). The NRC was created to issue operating licenses under the Atomic Energy Act and to enforce the requirements of the Act and the licenses. Federal law does not permit the NRC to delegate its responsibility for regulating nuclear power plants to states. According to 10 CFR 50.59, the Proposed Project would require an NRC license amendment only if changes would be made to the parameters outlined in the final safety analysis report. SCE expects that a NRC license amendment for the Proposed Project would not be necessary because all work would be conducted within the terms of the licenses (SCE, 2004b). Federal regulations (e.g., 10 CFR Parts 20, 50, 51, 71, and 72) also govern the possession, handling, storage, and transportation of radioactive materials from a nuclear power plant. See Appendix 4 of the ~~Draft~~ EIR (MRS, 2005) for more information on the federal regulations that govern these activities. The CPUC is preempted from imposing upon the operators any requirements concerning radiation hazards and nuclear safety.² For these reasons, the EIR analyzes solely for informational purposes project activities that are exclusively regulated by the federal government through the Atomic Energy Act and other regulations.

The scope of CEQA, as stated in CEQA Guidelines [Section 15131(a)], is also limited such that the economic and social effects of a project cannot be treated as significant effects on the environment. Therefore, this EIR provides only general information on the following issues:

² *Pacific Gas and Electric Company v. State Energy Commission*, 461 U.S. 190, 103 S.Ct. 1713 (1983).

- Plant safety and the risk of radiation exposure from normal or upset conditions at the nuclear power plant governed by NRC regulations and preempted from State-level control by the federal Atomic Energy Act.
- Proper handling or storage of radioactive waste, including the original steam generators, governed by NRC and DOT regulations and preempted from State-level control by the federal Atomic Energy Act.
- Seismic safety of the SONGS in its current design and certain permanent project components (e.g., containment after opening), subject to NRC engineering review.
- Emergency response plans, which are not changed by the Proposed Project.
- Economic costs of the Proposed Project and ratepayer issues, which are addressed in the CPUC general proceeding (A.04-02-026).

3.2 Air Quality

3.2.1 Proposed Project

Replacement Steam Generator Transport

Potentially significant emissions may result from transport activities, including the use of off-road transport equipment, on-road truck and vehicles used for traffic control, and workers commuting to and from the Proposed Project, if proper dust suppression is not implemented or if newer, lower-emitting construction equipment is not used. Combustion of fuels during transport of the RSGs would generate emissions that could temporarily affect local air quality for the duration of transport. By implementing mitigation measures for dust suppression and use of low-emission transport equipment, the potentially significant yet short-term impact of emissions from transport activities would be reduced to a less than significant level.

Replacement Steam Generator Staging and Preparation

Mobile and heavy-duty off-road equipment and a large temporary workforce would be used during construction or fabrication of temporary facilities for staging. The diesel- and gasoline-powered equipment and vehicles would contribute to the existing violations of ozone and particulate matter in the region during the short-term duration of the work. However, the San Diego Air Pollution Control District (SDAPCD) manages these emissions through a regionwide inventory that is used for attainment planning, which means emissions from this phase of work are not expected to impede attainment or maintenance of the ambient air quality standards. With this management approach, the impacts to air quality from on-road traffic emissions and diesel equipment combustion emissions would be reduced to a less than significant level.

Original Steam Generator Removal, Staging, and Disposal

Similar to the emissions during RSG staging, combustion emissions from routine construction equipment and vehicles used for OSG removal, staging, and disposal activities would contribute to the existing violations of ozone and particulate matter in the region during the short-term duration of the work, and the emissions are included in the regionwide inventory that is the basis for attainment. Emissions from relatively steady operation of a bank of portable engines that would be used while creating the containment opening could cause significant impacts. Implementation of recommended mitigation measures to use registered water pumping or power generating engines would reduce the potential impacts to a less than significant level.

Steam Generator Installation and Return to Service

Installation of the RSGs would involve use of similar construction equipment and would therefore result in similar emissions to those related to facility staging and preparation and OSG removal and transport.

Emissions during RSG installation are not expected to impede attainment or maintenance of the ambient air quality standards, and air quality impacts would be less than significant. There would be no permanent emission sources associated with the Proposed Project or the return to service, and after project completion, air quality conditions would be unchanged when compared to the existing environmental setting.

3.2.2 Alternatives

Transportation Route Alternatives

The range of equipment needed for the I-5/Old Highway 101 Route and MCBCP Inland Route Alternatives would be similar to that needed for the Proposed Project, and the daily rate of activity and emissions would generally be higher, although the total emissions per transport trip would be lower. The impacts and mitigation recommendations are similar to the Proposed Project with regard to emissions from construction and transport equipment. By implementing mitigation measures for dust suppression and use of low-emission transport equipment, the potentially significant yet short-term impact of emissions from transport activities would be reduced to a less than significant level.

Original Steam Generator Disposal Alternative

The impacts of constructing an onsite OSG Storage Facility would involve dust emissions from excavation for the foundation or floor of the storage facility. This impact would be slightly greater than that for the Proposed Project, which would involve no notable excavation. With mitigation for dust suppression, air quality impacts during construction of the onsite storage facility would be less than significant.

No Project Alternative

The No Project Alternative would probably cause SONGS to shut down before the NRC license expiration, and emissions from routine SONGS operations, including workers' vehicles commuting to the site, would cease. Without the Proposed Project, new generation or transmission facilities would be installed in southern California or Arizona to compensate for the lost generation of SONGS. Residual air quality impacts could occur if new power plants cause emissions to become localized within areas of substantial existing pollution.

3.3 Biological Resources

3.3.1 Proposed Project

Replacement Steam Generator Transport

Transport of the RSGs along the proposed Beach and Road Route would cause impacts to sensitive plants in the vicinity of Skull Canyon, where transitions away from unvegetated areas would be necessary to bypass the canyon. Additionally, sensitive vegetation is near the transport route (often within 10 feet or less), and it could be impacted if any travel occurs in undisturbed areas. Mitigation measures to conduct pre-transport sensitive plant surveys and delineate the transport route would reduce these impacts to less than significant levels. There is also a possibility that transport on the beach could damage macro-invertebrates, the tidewater goby, and San Diego fairy shrimp or that light and noise from transport activity would disturb wildlife. Matting and the proposed schedule for transport outside of the bird breeding season, along with best management practices proposed by the Applicant, would minimize these potential impacts so that they would be less than significant.

Vessel traffic within the MCBCP Del Mar Boat Basin could have an adverse impact on marine mammals and sea turtles; however, recommended mitigation measures, such as providing marine mammal observer training, could reduce this potential impact to less than significant levels.

Replacement Steam Generator Staging and Preparation

The construction of temporary facilities would take place on disturbed or developed property where native vegetation do not occur. However, if vehicles travel beyond the limits of any previously disturbed or developed areas, native vegetation including sage scrub, native grassland, and chaparral could be affected. Impacts could be reduced to less than significant levels with mitigation measures to delineate disturbance limits. These onshore activities would not adversely impact marine biological resources.

Original Steam Generator Removal, Staging, and Disposal

Original steam generator removal, staging, and disposal would occur on existing developed land. Therefore, no direct impacts to biological resources would be expected and indirect effects from the noise and light generated while cutting access holes in the containment domes are considered to be less than significant because of the current noise and light generated by SONGS. These onshore activities would not adversely impact marine biological resources.

Steam Generator Installation and Return to Service

The installation of the RSG would take place within completely developed portions of the SONGS facility. No impacts to terrestrial or marine biological resources are anticipated.

3.3.2 Alternatives

Transportation Route Alternatives

The I-5/Old Highway 101 Route Alternative would involve transport across four transitions from dirt and paved roads over annual grassland and ruderal habitat. Although very little native vegetation is supported in these locations, temporary impacts would occur as a result of installing and removing temporary pavement. The potential impacts would be reduced to a less than significant level with mitigation for revegetation of the temporarily disturbed areas.

The MCBCP Inland Route Alternative would involve transport across two transition points over areas that may support man-made wetlands adjacent to I-5 that could be disturbed by construction of temporary pavement or bridge structures. Because jurisdictional waters or wetlands may occur in the locations of the transitions, mitigation is identified that would require the Applicant to complete a jurisdictional delineation of waters of the U.S. regulated by the Army Corps of Engineers, in accordance with Army Corps of Engineers guidelines, to ensure that potential impacts to wetlands would be less than significant.

Original Steam Generator Disposal Alternative

Onsite storage of the OSGs would involve construction of an OSG Storage Facility that would have similar impacts to terrestrial and marine biological resources as the staging and preparation activities. Vehicular travel beyond the limits of any previously disturbed or developed areas could adversely affect native vegetation. Impacts could be reduced to less than significant levels with mitigation measures to delineate disturbance limits.

No Project Alternative

Under the No Project Alternative, the habitats at the SONGS site would remain largely unchanged for the short term, with gradual benefits to local habitats occurring after shutdown of SONGS 2 & 3. Limited areas

may be returned to native habitat sooner than under the Proposed Project, and shutdown of SONGS 2 & 3 would reduce the baseline effects of the SONGS cooling water system on the marine environment. Offsite, alternative sources of energy would be required to make up for the lost generating capacity, including construction of new generating and transmission facilities. Impacts to biological resources could be significant if new facilities are built in areas supporting sensitive habitats, plants, or animals. There would be no likely adverse impacts to the marine environment under the No Project Alternative.

3.4 Cultural Resources

3.4.1 Proposed Project

Replacement Steam Generator Transport

No historic or archaeological resources have been identified within the route itself. Specialized transporters would operate almost exclusively on existing paved and dirt roads or along the beach, and offloading at the boat basin would occur at an existing bulkhead, which would not require any modification of the shore or sea floor. Because the transport activities would be confined to disturbed surfaces and would not involve ground disturbance, no impacts to cultural resources are anticipated.

Replacement Steam Generator Staging and Preparation

The existing SONGS 2 & 3 facilities are located in an area that has been the subject of previous cultural resource surveys, and no historic or archaeological resources have been identified within the facilities. No excavation or ground-disturbing activity would occur outside the SONGS OCA or Mesa, and all temporary staging and preparation facilities would be located on previously developed and disturbed areas. Consequently, no impacts to cultural resources would occur.

Original Steam Generator Removal, Staging, and Disposal

Removal, staging, and disposal of the OSGs would not occur in areas previously identified as containing cultural resources. The work related to creating the containment opening would be confined to the developed surfaces surrounding the existing containment buildings. Consequently, no impacts to cultural resources would occur.

Steam Generator Installation and Return to Service

All installation activities would occur entirely on previously developed and disturbed areas and no ground-disturbing activity would occur. Because no cultural resources are present at the SONGS 2 & 3 facility, installation activities would not cause adverse impacts on previously recorded historical or archaeological resources.

3.4.2 Alternatives

Transportation Route Alternatives

No historic or archaeological resources have been identified within the area of potential effect for the I-5/Old Highway 101 Route. Specialized transporters used along this route would operate almost exclusively on existing paved and dirt roads, and therefore, would not adversely affect historic or archaeological resources. Similar to the Proposed Project, impacts to cultural resources along the I-5/Old Highway 101 Route would not be anticipated.

Six previously recorded archaeological resources are known to exist within the area of potential effect for the MCBCP Inland Route. The northern 2.2 miles of the MCBCP Inland Route is on the historic El

Camino Real, and the Applicant has proposed to use protective matting or other protection as necessary to avoid impacts to the Historic El Camino Real road surface during transport. The route also crosses historic railroad tracks. With Applicant-Proposed Measures, potential impacts to these resources would be less than significant. Where the route would pass through other recorded sites, although all of the cultural site components are off of the paved road, if transport activities stray off road, the potential impacts to cultural resources would be more severe than with the proposed Beach and Road Route or the I-5/Old Highway 101 Route. Because this impact would occur only under the MCBCP Inland Route Alternative, specific mitigation is identified that would require transport contractors to mark and avoid cultural sites that are along this route, which would reduce the potential impact to a less than significant level.

Original Steam Generator Disposal Alternative

Construction of an onsite OSG Storage Facility would occur in an area that has been the subject of previous cultural resource surveys, and although archaeological resources are known to exist within a half mile, no historic or archaeological resources have been identified within the SONGS facilities. Therefore, construction of the facility would not be expected to adversely affect historical or archaeological resources.

No Project Alternative

The No Project Alternative would most likely cause SONGS to shut down prior to the expiration of the NRC licenses, which would decrease the level of ongoing activity and the potential for unintended damage to cultural resources on the site. However, replacement New-generation and transmission facilities could be sited in a manner that reduces or avoids impact on cultural resources; however, significant impacts may still occur depending upon the location chosen. Mitigation would be specific to the site selected and the type of generation constructed. In comparison to the Proposed Project, the No Project Alternative may have a greater likelihood of affecting cultural resources, since the Proposed Project would require very little ground disturbing activities in an area with minor potential for cultural resources.

3.5 Geology, Soils, and Paleontology

3.5.1 Proposed Project

Replacement Steam Generator Transport

RSG transport along the proposed Beach and Road Route would cross over an unstable section of the coast in the landslide-prone San Onofre Bluff area, where the heavy transport loads could trigger a landslide. Although not likely, an earthquake during offloading or transport activities could also endanger worker safety by destabilizing the tractors or the load or by causing tsunami runup. Recommended mitigation measures would require the Applicant to prevent overloading of unstable ground by completing geological studies to identify unstable portions of the route and completing any necessary road improvements. Implementation of these measures, and measures to protect workers from the temporary effects of earthquake shaking and tsunami through worker safety plans, would reduce the impacts of unstable ground and worker safety to less than significant levels.

Replacement Steam Generator Staging and Preparation

The temporary facilities would be located on previously developed or disturbed areas and would have no impacts to geology, soils, or paleontology. Similar to RSG transport, seismic hazards could endanger worker safety but with implementation of mitigation measures to protect workers from the temporary effects of earthquake shaking, the potential impacts would be reduced to a less than significant level.

Original Steam Generator Removal, Staging, and Disposal

Creating the temporary opening in the containment structure would be subject to engineering studies and a work plan that would be reviewed by the NRC. The NRC oversight would ensure that the restored containment structure would be adequately protected from earthquake hazards. During other OSG removal, staging, and disposal activities, seismic hazards could endanger worker safety but with implementation of mitigation measures to protect workers from the temporary effects of earthquake shaking, the potential impacts would be reduced to a less than significant level.

Steam Generator Installation and Return to Service

There would be only transient impacts from the possibility of seismic ground shaking during steam generator installation. As with other phases of work, mitigation measures to protect workers from earthquake shaking would reduce potential impacts to less than significant levels. There would be no impacts to geological, soils, or paleontological resources from the return to service.

3.5.2 Alternatives***Transportation Route Alternatives***

Under the I-5/Old Highway 101 Route Alternative, transport over the unstable section of the coast in the landslide-prone San Onofre Bluff area would occur similar to the Proposed Project. As a result, the heavy transport loads under this alternative could trigger a landslide. Mitigation measures would require the Applicant to prevent overloading of unstable ground by completing geological studies to identify unstable portions of the route and completing any necessary road improvements, which would reduce the impacts of unstable ground to less than significant levels.

The MCBCP Inland Route Alternative would avoid transport along the potentially unstable San Onofre Bluffs, which would avoid the impact of heavy transport potentially triggering a landslide. The mitigation to prevent overloading of unstable ground would not be necessary with the MCBCP Inland Route.

Original Steam Generator Disposal Alternative

Onsite storage of the OSGs would involve operation of the OSG Storage Facility that could be exposed to geologic hazards, and the construction could accelerate soil erosion. To avoid improper soil management, mitigation is identified to prevent accelerated erosion during OSG Storage Facility construction. Additional measures would also be appropriate for avoiding the effects of expansive or corrosive soils and seismic hazards at the possible storage facility locations. To reduce the impacts of soils, mitigation would require the Applicant to prepare site-specific geotechnical investigation for OSG Storage Facility. To avoid the hazards of seismic ground shaking, mitigation would require the Applicant to prepare an updated Safety Analysis Report to accommodate the OSG Storage Facility. The mitigation would require the storage facility to incorporate any design measures identified by the NRC, as necessary. These measures would reduce the geologic hazards of this alternative to a less than significant level.

No Project Alternative

The No Project Alternative would probably cause the power plant to shut down prematurely. This would decrease the potential for infrastructure damage or worker injury due to earthquakes or landslides. However, Replacement replacement power plants based on either fossil fuels or renewable energy sources may have local geological impacts or be affected by geological hazards. Facility siting requirements for generation and transmission facilities, normally addressed through CEQA compliance or a similar process (i.e., out-of-

state production), would likely ensure that the replacement facilities are designed and built to minimize geological impacts or exposure to geological hazards.

3.6 Hazardous Materials

3.6.1 Proposed Project

Replacement Steam Generator Transport

Offloading and transport of the RSGs would involve short-term use of heavy equipment that requires hazardous materials to operate. Spills of hazardous materials during transport activities could potentially cause soil or groundwater contamination. Mitigation measures requiring the Applicant to implement the spill response procedures of SONGS and MCBCP and properly handle hazardous waste would ensure that these potential impacts would remain at less than significant levels.

Replacement Steam Generator Staging and Preparation

Development of temporary facilities would also involve routine use and storage of hazardous materials such as vehicle fuels, oils, and other vehicle maintenance fluids. Additionally, excavation and/or construction dewatering during staging and preparation may encounter previously unknown hazardous materials contamination of soil or groundwater. Implementation of mitigation measures for a stop work contingency plan and proper notification and containment would reduce any potential hazardous materials impacts to less than significant levels.

Original Steam Generator Removal, Staging, and Disposal

Hazardous materials may be encountered during preparation and creation of the containment opening and during OSG removal. Previously unknown asbestos or lead could be encountered, which would require compliance with federal, State, and local regulations to prevent asbestos and lead exposure to construction personnel and avoid significant impacts. As with other phases of the Proposed Project, mitigation to implement spill response procedures and properly handle and contain waste would reduce potential impacts to less than significant levels.

Steam Generator Installation and Return to Service

During activities related to steam generator installation, hazardous materials and waste may be generated. As with other phases of the Proposed Project, mitigation to implement spill response procedures and properly handle and contain waste would reduce potential impacts to less than significant levels.

3.6.2 Alternatives

Transportation Route Alternatives

With either of the RSG transportation route alternatives, improper use and disposal of hazardous materials may impair the environment similarly as the Proposed Project. Mitigation measures identified for the Proposed Project, including spill response procedures, proper handling of hazardous waste, and proper maintenance of heavy duty transporters would ensure that these potential impacts are less than significant.

Original Steam Generator Disposal Alternative

Excavation related to OSG Storage Facility construction could encounter previously unknown contaminated soil or groundwater. OSG Storage Facility construction related impacts would be similar to those

potentially occurring during development of temporary facilities for staging and preparation and would require the same mitigation to reduce potential impacts to less than significant levels.

No Project Alternative

Discontinuing operations at SONGS would decrease the risk for potential spills, leaks, ruptures, or otherwise release of hazardous materials that could cause soil or water contamination and would eliminate the continuation of hazardous materials generation at SONGS. Replacement New power generation and transmission facilities and related construction activities would need to comply with federal, State, and local requirements for hazardous materials management, which would include strategies to minimize potential impacts.

3.7 Hydrology and Water Quality

3.7.1 Proposed Project

Replacement Steam Generator Transport

Offloading activities at the MCBCP Del Mar Boat Basin could potentially disturb underwater sediments or accidentally introduce contaminants to the ocean water. Disturbance of marine sediments is not considered a significant water quality impact because there would be no work on the sea floor, and the offloading activity would be consistent with the existing boat basin operations. Spills of materials used by offloading and transport equipment or disturbed soils could substantially degrade surface water quality, but with measures proposed by the Applicant for controlling erosion and avoiding impacts to water quality from spills, the potential impacts would be reduced to less than significant levels.

Replacement Steam Generator Staging and Preparation

Staging and preparation would consist of construction and use of buildings and other facilities on previously disturbed surfaces within the SONGS site. Stormwater draining to San Onofre Creek and the Pacific Ocean could be contaminated by disturbed sediment and spilled materials during construction and use of these facilities, but with measures proposed by the Applicant for controlling soil erosion and containing any spills or leaks, the potential water quality impacts would be reduced to less than significant levels.

Original Steam Generator Removal, Staging, and Disposal

These activities would take place entirely within the SONGS facility, except for offsite disposal. As with staging and preparation activities, implementing measures to control soil erosion and contain any spills or leaks would eliminate the likelihood of sediment disturbances or spills affecting water resources. Offsite transportation for disposal would be by rail, which would need to comply with federal guidelines and regulations, and upon reaching their final location, disposal of the OSGs would be above-ground in a licensed facility specifically designed for the purpose. No water resources impact is expected.

Steam Generator Installation and Return to Service

As with removal of the original steam generators, installation of the replacement steam generators would take place entirely within the SONGS facility under spill containment procedures already in place by SONGS. These activities would not cause any significant adverse impacts to water resources.

3.7.2 Alternatives

Transportation Route Alternatives

Under either of the transportation route alternatives, transport of the steam generators would occur along paved or dirt roads, which would be consistent with the current use of those roads. As with the Proposed Project, with measures proposed by the Applicant for controlling soil erosion and containing any spills or leaks, the potential water quality impacts would be reduced to less than significant levels.

Original Steam Generator Disposal Alternative

Under this alternative, an onsite OSG Storage Facility would require construction that would occur on previously disturbed areas of the SONGS site. As with the Proposed Project, stormwater draining to San Onofre Creek and the Pacific Ocean could be contaminated by disturbed sediment and spilled materials during construction and use of the facility, but with measures to control soil erosion and contain any spills or leaks, the potential water quality impacts would be reduced to less than significant levels.

No Project Alternative

The early shutdown of SONGS under the No Project Alternative and subsequent decommissioning would most likely decrease the possibility of surface water degradation from SONGS wastewater discharge. However, hydrology Hydrology and water quality impacts associated with construction and excavation for several new power plants or other energy infrastructure needed to replace power currently provided by SONGS would be substantially greater than those identified for the Proposed Project. Alternative energy technologies would likely involve construction impacts over a large area that would be expected to have substantially greater impacts on nearby streams and water bodies as a result of related erosion and sedimentation.

3.8 Land Use, Recreation, and Military Operations

3.8.1 Proposed Project

Replacement Steam Generator Transport

RSG transport would pass through military and recreational land uses. These established land uses could be disrupted by the transport trips. Potential impacts to military activities and amphibious landing beaches (e.g., Red Beach) would be reduced through coordination with the Commanding Officer at MCBCP, which would include MCBCP approval of transport activities and the issuance of a real estate license. Use of recreational at San Onofre State Beach and Camp Del Mar would be restricted, which could cause a potentially significant impact. Mitigation to avoid periods of peak recreational usage would reduce the impact of transport activities disrupting recreational facilities to less than significant levels.

Replacement Steam Generator Staging and Preparation

Construction and use of the temporary facilities for RSG staging and preparation within the SONGS site is not anticipated to have significant land use or recreation impacts.

Original Steam Generator Removal, Staging, and Disposal

Because all activities related to OSG removal, staging, and disposal would be conducted within the SONGS site, there would be no significant impacts to land use or recreation resources.

Steam Generator Installation and Return to Service

The RSGs would be installed in the same location as the OSGs and would follow the same general operating procedure as the OSGs. Therefore, steam generator installation and return to service would not have significant adverse impacts on land use or recreation.

3.8.2 Alternatives

Transportation Route Alternatives

The I-5/Old Highway 101 Route Alternative would avoid travel along the beach area of Camp Del Mar, which would avoid the restrictions of special permit camping or preclusion of beach recreational facilities within Camp Del Mar that would otherwise be necessary under the Proposed Project. However, as with the Proposed Project, this alternative would pass through San Onofre State Beach, and it could restrict vehicular access to recreational facilities at Camp Del Mar for several hours during the actual transport of the RSGs. Mitigation to avoid periods of peak recreational usage would reduce the impact of transport activities disrupting recreational facilities to less than significant levels.

The MCBCP Inland Route Alternative would avoid the restrictions of special permit camping or preclusion of beach recreational facilities within Camp Del Mar that would otherwise be necessary under the Proposed Project, because it would not travel along the beach area of Camp Del Mar. It would also avoid traversing San Onofre State Beach and avoid the potentially significant impact that would be caused by the Proposed Project and the I-5/Old Highway 101 Route Alternative. As such, recreational resource impacts would be less than significant, and no mitigation would be necessary.

Original Steam Generator Disposal Alternative

The OSG Onsite Storage Alternative would involve locating a storage facility on the SONGS site, which is currently used for utility-related industrial uses. Because any OSG storage location within SONGS property would be onsite, it would not be incompatible with the existing onsite industrial uses, and no land use impacts would occur under this alternative.

No Project Alternative

Potentially, early shutdown of SONGS 2 & 3 under the No Project Alternative could make some land, that is currently off-limits, accessible to the general public. Although the No Project Alternative would not result in regional land use impacts in the near future, development scenarios foreseeable under the No Project Alternative could result in new generation or transmission facilities in southern California that may create impacts to land use, recreation, or agricultural uses beyond the vicinity of SONGS depending on site-specific circumstances.

3.9 Noise and Vibration

3.9.1 Proposed Project

Replacement Steam Generator Transport

Offloading of the RSGs and transport-related activities would increase noise levels temporarily for receptors in Camp Del Mar and within San Onofre State Beach. Military housing and a recreational vehicle park at Camp Del Mar and a military recreation area would be near the passing transporters, and campers at San Onofre State Beach could be immediately adjacent to the transporters. The noticeable noise increase above ambient levels would be a potentially significant short-term impact that could be reduced to a less than

significant level with recommended mitigation. These mitigation measures include providing advance notice of RSG offloading and transport activities to the San Onofre State Beach and MCBCP administrators and providing a liaison to address nuisance complaints.

Replacement Steam Generator Staging and Preparation

Fabrication or construction of temporary facilities would create noise from typical construction sources, such as cranes, lifts, and trucks. Because there would be no off-site staging, limited activities would occur near any sensitive areas including military residences, San Onofre State Beach, or the communities of the surrounding area. Noise from on-highway traffic would be sufficiently dispersed so that it would not noticeably affect traffic noise levels at any locations other than in the immediate vicinity of SONGS, where there are no sensitive receptors. As such, no noise sensitive receptor would be exposed to a substantial noise increase during staging and preparation.

Original Steam Generator Removal, Staging, and Disposal

Removal, staging, and disposal of the OSGs would create noise from typical construction sources, and for equipment other than the equipment needed for creating the containment opening, the noise would be sufficiently attenuated over distance so that no noise sensitive areas would be substantially affected. Especially intense noise sources would be operated during concrete and steel cutting of the containment opening. This activity could occur at night, which could adversely affect occupants of the military housing and camping areas within San Onofre State Beach. To minimize potential impacts of nighttime concrete cutting, mitigation is recommended that would require the Applicant to resolve any complaints. With the recommended mitigation, the noise impact would be reduced to a less than significant level.

Steam Generator Installation and Return to Service

There would be no new permanent noise sources associated with installation of the RSGs or the return to service, and after project completion, the noise environment around SONGS would return to existing conditions.

3.9.2 Alternatives

Transportation Route Alternatives

The I-5/Old Highway 101 Route Alternative would cause increased noise for receptors within Camp Del Mar east of the boat basin, and it would avoid affecting noise levels at the recreational vehicle park and military recreation area west of the boat basin. Similar to the Proposed Project, the transporter would pass through San Onofre State Beach where campers in recreational vehicles would be exposed to increased noise. The noticeable noise increase above ambient levels would be a potentially significant short-term impact that could be reduced to a less than significant level with recommended mitigation, including measures to provide advance notice of RSG offloading and transport activities to San Onofre State Beach and MCBCP administrators and providing a liaison to address nuisance complaints.

The MCBCP Inland Route Alternative would avoid affecting noise levels at the recreational vehicle park and military recreation area west of the boat basin within MCBCP and at San Onofre State Beach. Similar to the Proposed Project, the noise increase would be noticeable to receptors within MCBCP, and the impact could be reduced to a less than significant level with recommended mitigation, including measures to provide advance notice of RSG offloading and transport activities to the MCBCP administrators and providing a liaison to address nuisance complaints. With this alternative, no mitigation would be necessary for receptors within San Onofre State Beach.

Original Steam Generator Disposal Alternative

Onsite storage of the OSGs would involve construction of a storage facility and moving the OSGs into the facility, requiring short-term use of construction equipment and specialized transporters similar to those needed during construction of temporary staging and preparation facilities. As with the staging and preparation phase activities, noise from all OSG Storage Facility construction activity would be sufficiently distant from noise sensitive areas to eliminate the likelihood of any adverse noise impact.

No Project Alternative

Noise levels at SONGS would decrease under the No Project Alternative because routine operations of SONGS would cease. Adverse noise impacts could occur elsewhere due to replacement facilities. New generation and construction activities would need to comply with local noise ordinances and the local licensing process, which would include strategies to reduce noise impacts. Substantial noise effects would occur for any noise sensitive uses near possible replacement transmission facilities or combined cycle gas turbine power plants, including ~~or~~ wind farms.

3.10 Public Services and Utilities**3.10.1 Proposed Project*****Replacement Steam Generator Transport***

RSG transport under the Proposed Project would require use of roads in the boat basin and along Old Highway 101, where there are existing overhead and underground utilities. Overhead lines identified in Camp Pendleton Del Mar Boat Basin would not obstruct the path of the transporter, but the transporter could cause a load over buried utilities that could accidentally damage the utility systems. Mitigation is recommended to identify and protect the subsurface utilities that could be damaged by the heavy loads. Transport activities could also briefly restrict emergency vehicle travel on I-5, which would cause a potentially significant impact to public service systems. Mitigation is recommended to maintain adequate emergency vehicle access, which would reduce this impact to a less than significant level. The potential impact of demands on utility and public services exceeding the capabilities of existing service providers would be less than significant because water and portable lighting would be brought along the transport route.

Replacement Steam Generator Staging and Preparation

The effects of staging and preparation activities related to the potential disruption of utility and public service systems, obstruction of emergency access, and the increased demand on utility and public services due to the additional project workers would not be significant because relatively small quantities of waste would be generated.

Original Steam Generator Removal, Staging, and Disposal

The effects of OSG removal, staging, and disposal activities related to the potential disruption of utility and public service systems and the increased demand on utility and public services due to the project workers and OSG removal activities would not be significant. Creating the containment opening and other OSG removal activities would not disrupt emergency services because safety procedures and programs would be in place to respond to potential accidents at the containment facilities. The potential impact related to disrupting public service systems would be less than significant.

Steam Generator Installation and Return to Service

No excavation or ground disturbance activities would occur during RSG installation, and therefore no utility disruptions would occur. The potential emergency access impacts would be similar to those for other phases of the Proposed Project, and impacts associated with emergency access utility and public service systems demands would also be less than significant.

3.10.2 Alternatives***Transportation Route Alternatives***

Similar to impacts for the Proposed Project (Beach and Road Route), the size and weight of the combined RSG and transporter moving along the transportation route alternatives could accidentally damage subsurface utilities under either of the transportation route alternatives. To avoid disrupting utilities, mitigation is recommended to identify and protect the subsurface utilities that could be damaged by the heavy loads. Disrupting emergency service providers would be more likely as the transportation route alternatives follow MCBCP roadways and I-5. The transportation along I-5 would be coordinated with Caltrans and the California Highway Patrol to provide traffic control. Although it is not expected that the transporter would fully block MCBCP roadways or I-5 for an extended duration, a restriction of emergency access to areas along these roadways would be considered a significant impact. Mitigation is recommended to maintain adequate emergency vehicle access, which would reduce this impact to a less than significant level.

Original Steam Generator Disposal Alternative

Construction and operation of the onsite OSG Storage Facility under this alternative would cause impacts to public services and utility systems in addition to those that would occur with the Proposed Project. Transport of the OSGs to the storage facility could temporarily restrict emergency access, which would require mitigation to maintain the access. Additionally, an emergency occurring at the OSG Storage Facility could require resources currently unavailable or not yet reflected in the current emergency response plan. Updated response procedures would be dictated by NRC regulations, which would avoid this impact. The utility and public service requirements for construction of the storage facility would cause less than significant impacts to existing service providers.

No Project Alternative

Shutdown of SONGS under the No Project Alternative would decrease the use of public services and utility systems in the area, including provision of electricity, natural gas, supplemental police and fire protection, and solid waste removal.

Operation of new or replacement transmission facilities would have little demand on public services and utilities. However, new power plants could require substantial water supplies for cooling, which could require construction of local wastewater and stormwater facilities able to accommodate plant flows. Construction and operation of alternative energy and renewable technology facilities would have similar impacts on utilities and public services as traditional power generation facilities, although the requirements for water supplies and demands placed on wastewater and stormwater facilities during operation would be reduced.

3.11 Socioeconomics

3.11.1 Proposed Project

Replacement Steam Generator Transport

The RSG transport phase would cause no population growth, no substantial increase in demand for housing and labor, and no people or businesses to be displaced. There are no significant socioeconomic impacts from the transport of the RSGs under the Proposed Project.

Replacement Steam Generator Staging and Preparation

The staging and preparation phase would require approximately 1,000 workers in addition to those needed for the RFO. There would be no increased demand for housing or labor because there are spaces for campers or recreational vehicles onsite and local hotels and motels and private residences would be able to accommodate the portion of workers that is not drawn from within the local area. Additionally there would be no population growth or displacement as the staging and preparation phase is temporary and would only last for the duration of the Proposed Project, resulting in no significant socioeconomic impacts.

Original Steam Generator Removal, Staging, and Disposal

The socioeconomic impacts of the OSG removal, staging, and disposal would be similar to the impacts described for staging and preparation because the labor force for the two phases would largely be the same. There would be no permanent change to the area's population, demand for labor or housing, or displacement of population and housing.

Steam Generator Installation and Return to Service

The labor force for the steam generator installation and the return to service would be the same total labor force identified for OSG removal phases, and the negligible socioeconomic impacts from these activities would be similar to those identified for the previous phases.

3.11.2 Alternatives

Transportation Route Alternatives

Although both of the transportation route alternatives (the I-5/Old Highway 101 Route and the MCBCP Inland Route Alternatives) would require more intensive use of equipment than the Proposed Project (Beach and Road Route) and would pass different areas, the population and housing impacts of these alternatives would be the same as described for the Proposed Project, and there would be no significant socioeconomic impacts from the transport of the RSGs.

Original Steam Generator Disposal Alternative

Construction and use of the onsite OSG Storage Facility under the OSG Onsite Storage Alternative would require a greater amount of onsite construction. However, the population and housing impacts for this alternative would be similar to those described for the Proposed Project. Onsite storage of the OSGs is not expected to result in a permanent population increase. Labor demand impacts would be the same as those for the Proposed Project offsite disposal. No adverse socioeconomic impacts would occur with this alternative.

No Project Alternative

The No Project Alternative would result in the eventual loss of many jobs at SONGS because the operating life of the power plant would be shortened. However, construction of new generation or transmission facilities would require hundreds of temporary workers for each facility that would likely be drawn from local labor forces, depending on the level of skilled labor needed. Due to the temporary nature of construction activities, it is unlikely that there would be an increase in population, demands on labor force, demand for permanent housing, or displacement of people or housing. Operation of new power plants could potentially increase local population levels by a few hundred residents or less, which would typically have a nominal effect on the availability of local housing stock. It is not anticipated that the construction or operation of any replacement facilities, including alternative energy technologies and system enhancements, would result in substantial long-term population growth, create a substantial demand for labor or housing, or displace people or housing.

3.12 System and Transportation Safety**3.12.1 Proposed Project*****Replacement Steam Generator Transport***

The RSG transport phase of the Proposed Project could result in the creation of a navigational hazard in the vicinity of Oceanside Harbor and the Camp Pendleton Del Mar Boat Basin, but given the existing uses and design of the boat basin, the safety impact would be less than significant. Equipment used during overland transport of the RSGs could temporarily obstruct access on southbound I-5 for emergency response vehicles, but this would be a less than significant impact because these activities would be coordinated with transportation agencies before access to I-5 would be granted. No radiological hazard would occur because the RSGs would be newly manufactured.

Replacement Steam Generator Staging and Preparation

All staging and preparation activities, including development of temporary facilities, would occur away from areas with public access. No radiological hazard would occur because staging and preparation activities would not involve handling nuclear fuel or radioactive waste. Therefore, these activities would not pose any appreciable safety hazard to the public.

Original Steam Generator Removal, Staging, and Disposal

OSG removal, staging, and disposal activities would initially involve creating the containment opening. The NRC would provide oversight including a review of the structural modifications of the containment structure with the opening in place and after its repair. With NRC oversight, creating the containment opening and its subsequent repair would not have any impact on public safety. Other phases of OSG removal, staging, and transport for disposal would result in worker and public exposure to residual OSG radiation. The estimated contact radiation dose rates on the exterior of each OSG would be less than the NRC worker exposure limits, and the worst-case offsite exposure levels would be well below the most stringent public exposure limit and below the DOT requirements for the external surfaces of the transport container. Therefore, potential safety impacts associated with OSG removal and offsite transport to the disposal facility are considered less than significant.

Steam Generator Installation and Return to Service

Replacement of the SONGS steam generators would, at a minimum, allow the facility to operate through the end of its current license periods for each unit. The NRC operating licenses for SONGS 2 & 3 expire in 2022,

and if the Proposed Project is not approved, the Applicant expects that SONGS would need to shut down before then. Therefore, the Proposed Project would extend the operating life of SONGS, and the environmental effects of current operations would continue as a result of CPUC approval of the project. However, the risk associated with SONGS operating to the end of the current license periods has already been evaluated as part of the NRC license approval and, therefore, is part of the baseline.

3.12.2 Alternatives

Transportation Route Alternatives

Potential safety impacts associated with the two transportation route alternatives would be similar to the Proposed Project. Compared to the proposed Beach and Road Route, I-5 would be blocked for substantially longer periods under the I-5/Old Highway 101 Route Alternative, and all lanes of I-5 would be temporarily blocked for brief periods under the MCBCP Inland Route Alternative. This would limit the ability of emergency service personnel to respond to incidents in the region, but this would be a less than significant impact because these activities would be coordinated with transportation agencies before access to I-5 would be granted.

Original Steam Generator Disposal Alternative

Onsite storage of the OSGs would introduce new hazards related to the long-term presence of an OSG Storage Facility. The safety impacts of the OSG Onsite Storage Alternative include the potential for accidents at the storage facility or a terrorist attack. The storage facility would be designed to safely contain the OSGs, which would be classified as low level radioactive waste, and minimize the release of radioactive material. Although the probability of an inadvertent aircraft strike would be low, an aircraft accident or terrorist attack could result in damage to the OSG Storage Facility with a subsequent release of radioactive material, but the resulting dosage for any individuals near the loss of containment at the OSG Storage Facility would be limited and would be less than significant. Other potentially significant safety impacts of this alternative would be associated with the potential for seismic activity to compromise the integrity of the OSG Storage Facility. This impact would be reduced to a level that is considered less than significant with implementation of mitigation that would require the Applicant to prepare an updated Safety Analysis Report to accommodate the OSG Storage Facility. The mitigation for this geologic hazard would require the storage facility to incorporate any design measures identified necessary by the NRC, which would reduce the risk of the hazard to a less than significant level.

No Project Alternative

Providing replacement generation and transmission facilities under the No Project Alternative ~~with~~, such as new natural gas-fired combined-cycle power plants, would cause potential safety impacts. Depending on the exact location of a facility in relation to the public, potential safety impacts could be significant. Significant public hazards risk could result from an accidental release near a populated area during transportation, storage, and use of ammonia, a necessary component of emission control systems. In addition, there are hazards associated with the large capacity, high pressure natural gas pipelines that are needed to feed natural gas-fired combined-cycle power plants. Within the SONGS site, the No Project Alternative would have the beneficial impact of shortening the operating life, thereby reducing the overall baseline accident potential at the site.

3.13 Traffic and Circulation

3.13.1 Proposed Project

Replacement Steam Generator Transport

Potential transportation impacts for offloading and transport along the proposed Beach and Road Route would be due to additional daily project worker vehicle traffic and transporter and convoy trips on public roads. The transporter and support/service vehicles would travel mostly on the beach, paved, and dirt roads within MCBCP where the public is not normally allowed. The roads along the Beach and Road Route that can be accessed by the public are the northern three-mile portion of Old Highway 101 through San Onofre State Beach and approximately 0.2 miles of I-5 where it the route would cross Skull Canyon. All southbound lanes of I-5 would be closed for approximately one hour during each transporter passage, for a maximum of seven closures to accommodate seven one-way transporter trips. Given that the closures would be coordinated with Caltrans and that the appropriate traffic control measures would be implemented, impacts due to temporary closures of I-5 and Old Highway 101 would be considered less than significant. Mitigation is recommended to provide emergency vehicle access during the times to ensure that the impacts of public road closures would be reduced to a less than significant level.

Replacement Steam Generator Staging and Preparation

Staging and preparation would involve up to an additional 1,000 workers. The Applicant anticipates that this phase of the project would occur during a non-outage period, and that there would be two shifts staggered over three periods, resulting in six vehicular shifts each day. Construction materials and machinery to support steam generator replacement would be delivered during this project phase, but because these deliveries would be done outside of shift changes, the worker vehicles per shift and deliveries are anticipated to create a less than significant transportation impact.

Original Steam Generator Removal, Staging, and Disposal

During OSG removal, staging, and disposal, worst case traffic would occur during the refueling and maintenance outage period when personnel for the Proposed Project would travel to SONGS at the same time as approximately 1,000 RFO employees. This would create potentially significant traffic impacts on segments of I-5 that would be reduced to less than significant levels with mitigation measures for scheduling SONGS shift changes outside of peak hours. Disposal of the OSGs by rail would not cause an adverse affect on rail traffic because of coordination with railroad operators as proposed by the Applicant.

Steam Generator Installation and Return to Service

During the RSG installation and the return to service, impacts to I-5 would be similar to those that would occur during OSG removal activities, except that a number of material deliveries would be needed for the concrete needed to reconstruct the containment dome. The potentially significant traffic impacts on segments of I-5 would be reduced to less than significant levels with mitigation measures for scheduling material deliveries outside of peak hours.

3.13.2 Alternatives

Transportation Route Alternatives

The I-5/Old Highway 101 Route Alternative would involve similar numbers of transporter trips and similar types and numbers of support vehicles/equipment as would be used under the Proposed Project (Beach and Road Route). This alternative route would involve closure of I-5 in several places, and the closures

would be much longer than under the Proposed Project, with full closures of northbound and southbound lanes of I-5. Despite longer closures, as with the proposed Beach and Road Route, RSG transport via this alternative route would cause a less than significant impact on transportation because the closures would be temporary and the closures would be coordinated with Caltrans. To ensure that access of emergency vehicles is not restricted during the I-5 closures, mitigation is recommended for providing emergency vehicle access, which would reduce the impact of I-5 closures to a less than significant level.

The MCBCP Inland Route Alternative would involve impacts similar to those described for the Proposed Project. This alternative would also require temporary closures of I-5, but only for brief times near the immigration checkpoint. All other transport activities would be confined to MCBCP. To ensure that access of emergency vehicles is not restricted during the I-5 closures, mitigation is recommended for providing emergency vehicle access, which would reduce the impact of I-5 closures to a less than significant level.

Original Steam Generator Disposal Alternative

Storage of the OSGs onsite under the OSG Onsite Storage Alternative would have transportation impacts related to deliveries of equipment and materials to SONGS to construct the onsite storage facility. This would probably occur during the staging and preparation phase of activities or during OSG removal. Depending on the location of the storage facility, the OSGs could need to be transported to the Mesa on I-5 lanes requiring closure. This would cause a potentially significant impact due to the emergency vehicle passage restrictions. Mitigation is recommended for scheduling shift changes and material deliveries outside of peak hours and to provide emergency vehicle access, which would ensure that the traffic impacts of storage facility construction and onsite storage would be reduced to a less than significant level.

No Project Alternative

A beneficial impact to traffic levels on local roads would occur with the shutdown of SONGS. However, construction of new replacement generation and transmission facilities is likely to have significant traffic and circulation impacts elsewhere. Construction of the new facilities would occur over several years and would involve large number of construction personnel that would likely affect the road system in the area of the new facilities. System enhancement options that could occur under the No Project Alternative would not have substantial traffic and circulation impacts because system enhancement would involve little, if any, new construction.

3.14 Visual Resources

3.14.1 Proposed Project

Replacement Steam Generator Transport

Under the Proposed Project (along the Beach and Road Route), the RSGs, transporters, and associated vehicles would represent a highly prominent, strongly contrastive visual element of industrial character as seen by various viewer groups during overland transport from the Del Mar Boat Basin to SONGS. The project would have the potential to obstruct scenic views and could also result in night lighting impacts. Visitors at San Onofre State Beach and the Bluffs Campground would potentially be exposed to very close-up views of the RSGs and transporters, and although temporary, this would be a very strong adverse effect depending on the transport schedule. If the transport activities cannot occur during the seasonal closure of the Bluffs Campground, the effects on campers could be severe, and to reduce the impact to a less than significant level, mitigation would need to be implemented to request a decision on closure of San Onofre State Beach and provide advance notice of the campground closure. Mitigation would also be

needed to minimize night lighting in MCBCP and minimize the disturbance to roadway and landscaping within San Onofre State Beach. With these measures, visual impacts during transport would be less than significant.

Replacement Steam Generator Staging and Preparation

Visibility of temporary project-related facilities or activities within SONGS OCA and Mesa, including staging and preparation facilities, would not be visible from key off-site viewing locations, and would thus cause no adverse visual impacts. For various project staging and preparation facilities or activities that could occur outside of the existing masonry OCA perimeter walls in the area west of I-5, visual impacts in the foreground of I-5 and San Onofre State Beach could occur. Mitigation to minimize or eliminate staging within the visual foreground of I-5 and San Onofre State Beach would reduce this impact to a less than significant level.

Original Steam Generator Removal, Staging, and Disposal

The visibility of OSG removal, staging, and preparation for disposal activities would be similar to those described for staging and preparation because the activities would take place within the OCA and would not be visible from off-site viewing locations. OSG disposal would entail loading the cut-up steam dome and other destroyed components into shipping containers for rail transport, which would not represent an unusual or out of the ordinary visual incident as seen by off-site viewers during shipping.

Steam Generator Installation and Return to Service

RSG installation and the return to service would entail moving the RSGs into the containment structures and reconstructing the containment building, which would be visually prominent activities within the site. However, the RSGs and transporters would not contrast markedly in character with the other, larger structures of industrial character comprising the SONGS site. With return to service, the various temporary structures built for staging and installation would be removed, resulting in a return of the SONGS site to a state essentially like that of the existing conditions.

3.14.2 Alternatives

Transportation Route Alternatives

The I-5/Old Highway 101 Route Alternative would cause visual impacts similar to those described for the Proposed Project including view intrusion, view obstruction, or night lighting during transport. The RSGs, transporters, and associated vehicles would represent a highly prominent, strongly contrastive visual element of industrial character as seen by viewer groups within San Onofre State Beach and MCBCP and by motorists on I-5. As with the Proposed Project, the effects on campers could be severe, and to reduce the impact to a less than significant level, mitigation would need to be implemented to request a decision on closure of San Onofre State Beach and provide advance notice of the campground closure. Mitigation would also be needed to minimize night lighting in MCBCP and minimize the disturbance to roadway and landscaping within San Onofre State Beach. This alternative would also involve a minor amount of existing vegetation removal in the I-5 shoulder and construction of an asphalt ramp that could result in moderate adverse levels of contrast to the visual foreground of an eligible State Scenic Highway corridor. This impact would be reduced to a less than significant level with mitigation to restore ground disturbances in visual foreground of I-5.

The MCBCP Inland Route would occur mostly on roads within MCBCP, and no segments of this alternative route would occur in San Onofre State Beach. This would avoid the visual impacts to San Onofre State Beach that would otherwise occur with the Proposed Project. The route would pass near a northbound auto

rest area east of I-5. However, the heavy landscaping at the rest area would effectively screen views of the RSGs. A paved transition from I-5 southbound lanes and ramps could be required to bridge over the existing San Diego Northern Railroad tracks ballast to a second transition. Construction of transition and ramps could result in minor disturbance to the immediate foreground of I-5, including a minor amount of vegetation removal. These effects could result in weak adverse levels of contrast to the visual foreground of an eligible State Scenic Highway corridor. This impact would be reduced to a less than significant level with mitigation to restore ground disturbances in visual foreground of I-5.

Original Steam Generator Disposal Alternative

The OSG Storage Facility under this alternative could occur within the OCA, where it would not be visually evident or conspicuous from any offsite viewing location, or it could occur at the Mesa, where intervening terrain would obstruct views. Moving the OSGs into the storage facility would be a short-term and insignificant visual impact. The OSG Onsite Storage Alternative could cause potentially adverse visual impacts if staging activities for construction of the storage facility would occur in the visual foreground of I-5 and San Onofre State Beach, which would warrant mitigation similar to that identified for other project-related staging activities above. With this mitigation, the visual impacts of this alternative would be reduced to a less than significant level.

No Project Alternative

Under the No Project Alternative, the facility may be dismantled and removed from the site before the license expiration dates, which would eliminate it from views in the area, but it could alternatively lead to the plant remaining largely intact and secured as it is in the existing conditions. This would depend on the decommissioning process, which is separate from and unrelated to the Proposed Project. Replacement facilities including power plants and transmission lines would cause visual impacts similar to other large-scale industrial facilities, and depending upon the setting in which they occur, they may represent potentially significant visual impacts. However in many cases, mitigation measures including landscape screening, siting modifications to reduce visual exposure of sensitive viewers, and painting of the power plant could reduce such impacts to less than significant levels. Impacts could also be created from other associated factors such as exhaust plumes or new transmission infrastructure. Use of alternative technologies, such as solar thermal, photovoltaics, or wind, could transform landscapes into vast areas of monotonous, industrial character, potentially causing significant adverse visual impacts. With appropriate siting, impacts of smaller individual facilities could presumably be reduced.

ES.4 Summary Comparison of the Proposed Project and Alternatives

This section summarizes and compares ~~the environmental advantages and disadvantages of the Proposed Project and the alternatives evaluated in this EIR.~~ Section 4.1 below describes the methodology used for comparing alternatives. Section 4.2 defines the Environmentally Superior Alternative, based on comparison of each alternative with the Proposed Project. Section 4.3 presents a comparison of the No Project Alternative with the alternative that is determined in Section 4.2 to be environmentally superior.

4.1 Comparison Methodology

CEQA does not provide specific direction regarding the methodology of alternatives comparison. Each project must be evaluated for the issues and impacts that are most important; this varies depending on the project type and the environmental setting. Issue areas that are generally given more weight in comparing alternatives are those with long-term environmental impacts (e.g., permanent loss of land, habitat, or scenic resources or

permanent loss of use of recreational facilities). Impacts associated with construction (temporary or short-term), or those that are easily mitigable to less than significant levels, are generally given less weight.

This comparison is designed to satisfy the requirements of CEQA Guidelines Section 15126.6(d), Evaluation of Alternatives, which states that:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)].

The following methodology was used to compare alternatives in this EIR:

- **Step 1: Identification of Alternatives.** An alternatives screening process (Section C in the ~~Draft~~-EIR) was used to evaluate various alternatives to the Proposed Project. The screening process was used to analyze all feasible options. SCE identified two Inland Route Transport Options in conjunction with its preferred RSG transport option (the Beach and Road Route). In addition to SCE's proposed transport options, the EIR preparation team identified one alternative to offsite disposal of the OSGs (the OSG Onsite Storage Alternative). A No Project Alternative was also identified and evaluated.
- **Step 2: Determination of Environmental Impacts.** The environmental impacts of the Proposed Project and the various alternatives were described (in Sections D.2 through D.14 in the ~~Draft~~-EIR), including the potential impacts of the No Project Alternative which could lead to construction and operation of a range of replacement facilities. The impacts have been summarized for each alternative in tables below to facilitate comparison of the Proposed Project with alternatives.

Step 3: Comparison of Proposed Project with Alternatives. The environmental impacts of the Proposed Project were compared to those of each alternative to determine the environmentally superior alternative. The comparison focuses on the most important issue areas (e.g., safety, land use and recreation, biological resources, visual resources, and geology). The environmentally superior alternative was then compared to the No Project Alternative.

Determining an environmentally superior alternative is difficult because of the many factors that must be balanced. The impact summaries in the detailed comparison tables of Section 4.2 provide information on how the issue areas were balanced. Although this EIR identifies one environmentally superior alternative, it is possible that the ultimate decision-makers could balance the importance of each issue area differently and reach a different conclusion.

4.2 Environmentally Superior Alternative

This EIR presents alternatives to the following Proposed Project components: (1) transportation routes for the RSGs; and (2) OSG disposal. See Section 1.1 and Figure ES-1 above for a description and map of the Proposed Project and alternative transportation routes. There are two transportation route alternatives, the OSG Onsite Storage Alternative, and the No Project Alternative. See Section C of the ~~Draft~~-EIR for more information on the Proposed Project alternatives.

The following is a discussion of the advantages and disadvantages of each alternative that provides a meaningful evaluation, analysis, and comparison of each alternative with the Proposed Project, and a determination of whether the Proposed Project or an alternative is considered to be environmentally superior within each component of the project. Each of the thirteen issue areas was considered during analysis of the alternatives.

4.2.1 Transportation Route Alternatives

Table ES-2 provides a comparison of the impacts that would occur with each of the transportation route alternatives.

The Proposed Project would involve transportation of the RSGs along the Beach and Road Route. The Beach and Road Route would involve temporary effects to the natural areas of the beach, disruption of MCBCP residents and campers at San Onofre State Beach, and brief closures of southbound I-5. This route would result in potentially significant (Class II) impacts to nine issue areas, including air quality, biological resources, geology and soils, water quality, recreation, noise, public services, traffic and circulation, and visual resources. No significant and unavoidable impacts (Class I) would occur. The Beach and Road Route has three potentially significant impacts related to geologic hazards, recreation, and visual resources that could be reduced to less than significant levels by implementing other transport route alternatives. The potentially significant impacts of extremely heavy loads on the San Onofre Bluffs (Impact G-1), disrupting recreational activities (Impact L-2), and removing the landscaping within San Onofre State Beach (Impact V-2) could be reduced, and related mitigation measures would not be necessary if a route avoiding these resources is selected.

The I-5/Old Highway 101 Route Alternative would shift transport activities almost entirely to paved roads requiring short-term closures of a substantial portion of southbound I-5 between the MCBCP Del Mar Boat Basin and SONGS. This alternative would generally avoid impacts to natural areas of the beach but cause substantially increased, although still less than significant, impacts to traffic. The impacts to MCBCP residents and campers at San Onofre State Beach would be similar to the Proposed Project. This route alternative would result in potentially significant (Class II) impacts to the same nine issue areas as the Proposed Project. No significant and unavoidable impacts (Class I) would occur. Of the potentially significant impacts that would occur under the Proposed Project, this route alternative would not eliminate any. Although it would eliminate one less than significant biology impact to beach habitats (Impact B-3), this route would also add a Class II impact to biological resources by impacting annual grassland and ruderal habitat with paved transitions (Impact B-8). Because of this additional impact, selection of this route would require implementation of an additional mitigation measure that has been identified for biology.

The MCBCP Inland Route Alternative would shift transport activities almost entirely to paved roads within MCBCP, including brief closures of southbound and northbound I-5 near SONGS. This alternative would generally avoid impacts to natural areas of the beach and to campers at San Onofre State Beach while causing traffic impacts that would be marginally increased over those of the Proposed Project. Of the potentially significant impacts that would occur under the Proposed Project, this alternative would eliminate the three potentially significant impacts of extremely heavy loads on the San Onofre Bluffs (Impact G-1), disrupting recreational activities (Impact L-2), and removing the landscaping within San Onofre State Beach (Impact V-2). Although it would eliminate one less than significant biology impact to beach habitats (Impact B-3), this route would also add a Class II impact to biological resources by impacting possible wetland areas with paved transitions (Impact B-9). It would also create an additional Class II impact to cultural resources, which are abundant along the MCBCP Inland Route (Impact C-1). If it is selected, this route would require implementation of the additional mitigation measures that have been identified for biology and cultural resources, but it would eliminate the need for certain mitigation of geologic hazards, recreational disruption, and visual effects.

Table ES-2. Proposed Project vs. Transportation Route Alternatives

Issue Area	Proposed Project (Beach and Road Route)	I-5/Old Highway 101 Route Alternative	MCBCP Inland Route Alternative
Air Quality	Less Preferred No Preference because total emissions per trip would be higher than the other route alternatives <u>but daily emissions would be lower</u>	Slightly Preferred No Preference because the total emissions per trip would be reduced <u>but daily emissions would be increased</u>	Slightly Preferred No Preference because the total emissions per trip would be reduced <u>but daily emissions would be increased</u>
Biological Resources	Slightly Preferred because paved transition ramps would not be needed, and impacts to waters of the U.S. or wetlands would be avoided	Less Preferred because of impacts from temporary paved transition ramps	Less Preferred because of potential temporary impacts to waters of the U.S. or wetlands
Cultural Resources	Slightly Preferred because of likelihood of avoiding cultural resources impacts	Slightly Preferred because of likelihood of avoiding cultural resources impacts	Not Preferred because of potential damage to known cultural resources
Geology, Soils, and Paleontology	Less Preferred because of proximity to potentially unstable ground along the San Onofre Bluffs	Less Preferred because of proximity to potentially unstable ground along the San Onofre Bluffs	Clearly Preferred because this route would avoid transport along the potentially unstable San Onofre Bluffs
Hazardous Materials	No Preference	No Preference	No Preference
Hydrology and Water Quality	No Preference	No Preference	No Preference
Land Use and Recreation	Less Preferred because of temporary disruption to recreational facilities at San Onofre State Beach and Camp Del Mar	Less Preferred because of temporary disruption to recreational facilities at San Onofre State Beach and Camp Del Mar	Clearly Preferred because of reduced disruption to recreational facilities at San Onofre State Beach and Camp Del Mar
Noise and Vibration	Less Preferred because of impact to sensitive receptors at San Onofre State Beach	Less Preferred because of impact to sensitive receptors at San Onofre State Beach	Slightly Preferred because this route would avoid impacts to receptors at San Onofre State Beach
Public Services and Utilities	Slightly Preferred because of least potential for restricting emergency vehicle access	Less Preferred ; however, less potential for wildfire hazards	Less Preferred ; however, less potential for wildfire hazards
Socioeconomics	No Preference	No Preference	No Preference
System and Transportation Safety	Slightly Preferred because of least potential for restricting emergency vehicle access	Less Preferred because of potential for temporarily restricting emergency vehicle access	Less Preferred because of potential for temporarily restricting emergency vehicle access
Traffic and Circulation	Slightly Preferred because of least potential for restricting emergency vehicle access or disrupting I-5	Less Preferred because of potential for restricting emergency vehicle access or disrupting I-5	Less Preferred because of potential for restricting emergency vehicle access or disrupting I-5
Visual Resources	Less Preferred because of visibility of staging and preparation activities, and landscape/roadway impacts at San Onofre State Beach	Less Preferred because of landscape/roadway impacts at San Onofre State Beach	Clearly Preferred because of least likelihood to disrupt use of San Onofre State Beach

Clearly Preferred means this alternative eliminates the need for mitigation that would otherwise occur.
Not Preferred means this alternative creates a need for mitigation that would not otherwise occur.

4.2.2 Original Steam Generator Offsite Disposal Alternative

Table ES-3 provides a comparison of the impacts of the Proposed Project (offsite OSG disposal) and the OSG Onsite Storage Alternative.

The Proposed Project would involve transport of the OSGs to a low level radioactive waste facility out of state for disposal. Offsite transport of the OSGs would occur by rail. No unique potentially significant (Class II) impacts would be caused by the proposed activity of offsite disposal activity.

The OSG Onsite Storage Alternative would involve siting and construction of an OSG Storage Facility within either the SONGS OCA or the Mesa east of I-5. The OSG Storage Facility would contain the OSGs until decommissioning of the SONGS site. None of the project-related impacts would be reduced or eliminated by selecting the OSG Onsite Storage Alternative, and project impacts related to RSG transport, RSG staging and preparation, OSG removal, and RSG installation activities would not be changed under this alternative. Construction of an onsite OSG Storage Facility would involve construction-related impacts that would not occur with the Proposed Project, including additional short-term impacts related to air quality, soil erosion, contaminant spills, and construction traffic. Longer-term effects would include increased safety risks and the need to modify emergency response procedures to accommodate the onsite OSG Storage Facility. The OSG Onsite Storage Alternative would cause additional potentially significant impacts related to soil erosion (Impact G-4) and geologic hazards (Impacts G-5 and G-6) (Class II). Other additional impacts related to system safety, including an increased likelihood of accidents with adverse consequences (Impact S-2) or terrorist attacks (Impact S-3), would also occur but would be less than significant (Class III). If selected, the OSG Onsite Storage Alternative would require implementation of the additional mitigation measures that have been identified related to geology.

Table ES-3. Proposed Project vs. OSG Disposal Alternative

Issue Area	Proposed Project (Offsite OSG Disposal)	OSG Onsite Storage Alternative
Air Quality	Slightly Preferred because avoiding excavation and construction emissions for storage facility	Less Preferred
Biological Resources	Slightly Preferred because of least potential for sediment runoff or contaminant spills	Less Preferred
Cultural Resources	Slightly Preferred because of likelihood of avoiding cultural resources impacts	Less Preferred
Geology, Soils, and Paleontology	Clearly Preferred because of least potential for soil erosion during storage facility construction or exposing storage facility to seismic hazards	Not Preferred
Hazardous Materials	No Preference	No Preference
Hydrology and Water Quality	Slightly Preferred because of least potential for sediment runoff or contaminant spills affecting water quality	Less Preferred
Land Use and Recreation	No Preference	No Preference
Noise and Vibration	No Preference	No Preference
Public Services and Utilities	Slightly Preferred because emergency response procedures would not need to be changed to accommodate storage facility	Less Preferred
Socioeconomics	No Preference	No Preference
System and Transportation Safety	Slightly Preferred because of potential for accidents or terrorist attack involving storage facility	Less Preferred

Table ES-3. Proposed Project vs. OSG Disposal Alternative

Issue Area	Proposed Project (Offsite OSG Disposal)	OSG Onsite Storage Alternative
Traffic and Circulation	Slightly Preferred because disposal by rail transport would not involve moving OSGs onsite or storage facility construction traffic	Less Preferred
Visual Resources	Slightly Preferred because offsite disposal would avoid addition of new storage facility to site	Less Preferred

Clearly Preferred means this alternative eliminates the need for mitigation that would otherwise occur.

Not Preferred means this alternative creates a need for mitigation that would not otherwise occur.

4.2.3 Definition of Environmentally Superior Alternative

Table ES-1 above shows the environmentally superior alternatives for the SONGS Steam Generator Replacement Project. Compared to the Proposed Project, the MCBCP Inland Route Alternative is preferred. The conclusions for each phase of the project are summarized below.

Conclusion for Transportation Route Alternatives

The MCBCP Inland Route Alternative is slightly preferred by a plurality of issue areas (see Table ES-2). This alternative would avoid potentially significant impacts related to geologic hazards, recreation disruption, and visual effects because it would avoid traveling on the San Onofre Bluffs and through San Onofre State Beach. The MCBCP Inland Route would cause additional potentially significant impacts to biological and cultural resources, but with mitigation to protect and restore possible wetlands at the transition areas across I-5 and to clearly flag cultural resources adjacent to the MCBCP roads, these impacts would be reduced to less than significant levels.

Conclusion for OSG Disposal Alternative

The OSG Onsite Storage Alternative is not preferred over the proposed approach of offsite OSG disposal (see Table ES-3). It would not eliminate or reduce any of the potentially significant impacts of the Proposed Project, and it would create a range of additional impacts related to both construction activities (air quality, soil erosion, contaminant spills, and construction traffic) and long-term presence of an OSG Storage Facility (exposure to geologic hazards and risks of accidents or terrorist attacks). Because it would avoid these effects, the Proposed Project with offsite OSG disposal is preferred.

4.3 No Project Alternative vs. the Environmentally Superior Alternative

Summary of the No Project Alternative and Its Impacts. The No Project Alternative is described in Section C.6 of the ~~Draft~~ EIR. It would include the continued use of the SONGS OSGs until the OSGs reach the end of their useful lives some time in the next decade, possibly as soon as 2009. At that time, approximately 2,150 MW of base-load system generation capacity for SCE customers would need to be replaced. Although replacement facilities would be needed, early shutdown of SONGS 2 & 3 would result in some beneficial safety and environmental impacts in the vicinity of SONGS. The No Project Alternative consists of the following options:

- **Replacement Generation Facilities:** In the future, environmental and safety concerns will most likely preclude the construction of new nuclear, hydroelectric, and coal- and oil-fired power plants as replacement generation; therefore combined cycle natural-gas fired turbine power plants could be built around southern California or Arizona with transmission connections to SCE customers. At this time, the details of such projects are unknown, and therefore it would be difficult to determine any definite impacts. However, it is known approximately how much land would be required to construct a combined cycle power plant, how much water would be needed to provide sufficient cooling, and how much natural gas would be used to operate the new facilities. This information could be used to determine potential impacts to areas such as biological resources, hydrology and water quality, and air quality.
- **Replacement Transmission Facilities:** New transmission facilities would need to be built for any new generation capacity constructed, but new transmission facilities could also be used as a substitute for some in-State generation if access to generation in the Pacific Northwest and the Southwest is improved. Currently the details of potential transmission projects are not known; however, in general these projects produce short-term impacts during construction and long-term impacts during operation of the transmission line. Short-term impacts include air and noise emissions, loss of biological habitat, traffic disruption, and potential disruption of utility service. Long-term impacts include visibility of transmission infrastructure, corona noise, permanent loss of biological habitat or cultural resources, and potential changes in electric and magnetic fields.
- **Alternative Energy Technologies:** Options for replacement generation include principal renewable and other alternative energy technologies such as solar thermal, photovoltaics, wind, geothermal, hydropower, fuel cells, and biomass. The main benefit of these technologies is that they do not rely on fossil fuel, consume little water, and generate either zero or reduced levels of air pollutants and hazardous wastes. However these technologies do create some environmental impacts such as permanent disturbance or destruction of habitat, visual changes, generation of hazardous waste, noise production, endangerment of wildlife and fish, poor water quality due sedimentation and turbidity, change of land uses, and some air emissions.
- **System Enhancement Options:** This option would not require the construction of new major generation or transmission facilities, but rather reduce the need for additional base-load energy. This would be accomplished through energy conservation or demand-side management and distributed generation (generation through facilities providing less than 50 MW in capacity). While this option would not provide for full replacement of the energy lost due to shutdown of SONGS, it would allow for offset of a small percentage of the lost energy supply. This option is the most uncertain and unreliable in terms of generation capacity or savings, opportunity for growth, and specific potential uses.

Comparison of Environmentally Superior Alternative with No Project Alternative. The Environmentally Superior Alternative would consist of replacement steam generator transport along the MCBCP Inland Route and offsite disposal of the OSGs.

In comparison, long-term impacts for many environmental issue areas could occur under the No Project Alternative. Construction of new power plants, including alternative energy technologies, under the No Project Alternative would likely result in some level of short-term (construction) and long-term (operation) regional impacts to air quality, biological resources, water quality, noise, hazardous waste, public health, and visual resources. Overall, the Environmentally Superior Alternative is preferred over the No Project Alternative.

ES.5 Impact Summary Tables

Tables ES-4 and ES-5 on the following pages summarize all identified impacts of the Proposed Project (Table ES-4) and the alternatives (Table ES-5). For each impact, the following information is presented: impact number and title, impact class (Class I, II, III, or IV), applicable mitigation measure(s), and residual impact (whether significant or less than significant).

Table ES-4. Summary of Impacts and Mitigation for the Proposed Project

Impact	Impact Class ^a	Project Component	Mitigation Measure(s)	Residual Impact ^b
AIR QUALITY				
A-1 Replacement activities would cause emissions from transport and construction equipment	Class II	RSG Transport, Staging/Prep	A-1a Suppress dust at all work areas or transport routes and on public roads A-1b Use low-emission transport equipment	LTS
A-2 Creating containment opening would cause substantial emissions of ozone precursors from portable engines	Class II	OSG Removal	A-2a Use registered water pumping or power generation engines	LTS
BIOLOGICAL RESOURCES				
B-1 Transport of the RSGs could impact sensitive plants in order to avoid Skull Canyon	Class II	RSG Transport	B-1a Conduct pre-transport sensitive plant surveys	LTS
B-2 Vehicular travel into undisturbed areas along the transport route could impact native vegetation	Class II	RSG Transport	B-2a Delineate transport route	LTS
B-3 Transport of the RSGs could temporarily disturb beach sand macro-invertebrates, tidewater goby, and San Diego fairy shrimp.	Class III	RSG Transport	None	LTS
B-4 Transport of the RSGs would temporarily disturb sensitive wildlife as a result of increased night lighting along the route	Class III	RSG Transport	None	LTS
B-5 Transport of the RSGs would temporarily disturb sensitive wildlife as a result of increased noise along the route	Class III	RSG Transport	None	LTS
B-6 Vessel traffic would increase the likelihood of collisions with protected marine mammals	Class II	RSG Transport	B-6a Provide marine mammal observer training and trained observers	LTS
B-7 Vehicular travel into undisturbed areas on the Mesa could directly impact native vegetation as a result of the temporary facilities	Class II	Staging/Prep	B-7a Delineate disturbance limits on the Mesa	LTS
CULTURAL RESOURCES				
None	—	All Phases	None	N/A

^a Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial)^b LTS: Less than significant.

Table ES-4. Summary of Impacts and Mitigation for the Proposed Project

Impact	Impact Class ^a	Project Component	Mitigation Measure(s)	Residual Impact ^b
GEOLOGY, SOILS, AND PALEONTOLOGY				
G-1 Extremely heavy loads could mobilize unstable ground along San Onofre Bluff area of transport route	Class II	RSG Transport	G-1a Prevent overloading of unstable ground along transport route	LTS
G-2 Temporary effects of earthquake shaking could endanger worker safety	Class II	All Phases	G-2a Protect workers from temporary effects of earthquake shaking	LTS
G-3 Temporary effects of earthquake-induced tsunami could endanger worker safety	Class II	RSG Transport	G-3a Protect workers from temporary effects of tsunami	LTS
HAZARDOUS MATERIALS				
H-1 Heavy equipment fuel, oil, or hydraulic line leak or rupture could cause hazardous materials release	Class II	All Phases	H-1a Implement SONGS and/or MCBCP spill response procedures H-1b Conduct routine inspections and maintenance of transporter	LTS
H-2 Heavy equipment maintenance could cause hazardous materials release	Class II	All Phases	H-2a Properly handle maintenance waste	LTS
H-3 Previously unknown contaminated soil/groundwater could be encountered during construction	Class II	Staging/Prep	H-3a Stop work and notify appropriate project personnel and regulators	LTS
H-4 Previously unknown asbestos or lead could be encountered	Class III	OSG Removal	None	LTS
HYDROLOGY AND WATER QUALITY				
W-1 Offloading the generators at the Del Mar Boat Basin could disturb marine sediments or accidentally introduce contaminants to the ocean water	Class III	RSG Transport	None	LTS
W-2 Transport of the generators along the beach could result in contamination of beach or stream waters	Class III	RSG Transport	None	LTS
W-3 Construction of temporary facilities associated with staging and preparation could result in sediment disturbance or materials spills that would contaminate stormwater	Class III	Staging/Prep	None	LTS

^a Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial)^b LTS: Less than significant.

Table ES-4. Summary of Impacts and Mitigation for the Proposed Project

Impact	Impact Class ^a	Project Component	Mitigation Measure(s)	Residual Impact ^b
LAND USE, RECREATION, AND MILITARY OPERATIONS				
L-1 Transport would disrupt an established land use	Class III	RSG Transport	None	LTS
L-2 Transport would disrupt recreational activities	Class II	RSG Transport	L-2a Avoid peak recreational usage Mitigation Measures N-1a, V-1a, and V-1b (below)	LTS
NOISE AND VIBRATION				
N-1 Transport would temporarily increase local noise levels near sensitive receptors	Class II	RSG Transport	N-1a Provide advance notice of offloading and transport N-1b Provide liaison for nuisance complaints	LTS
N-2 Creating containment opening would increase local night-time noise levels	Class II	OSG Removal	N-2a Resolve complaints of noise from concrete cutting	LTS
PUBLIC SERVICES AND UTILITIES				
U-1 Proposed Project would disrupt utilities	Class II	RSG Transport, Staging/Prep	U-1a Identify and protect subsurface utilities	LTS
U-2 Proposed Project would disrupt public service systems	Class II	All Phases	U-2a Maintain adequate emergency vehicle access	LTS
U-3 Proposed Project's utility, security, and public service demands would exceed the capabilities of existing service providers	Class III	All Phases	None	LTS
SYSTEM AND TRANSPORTATION SAFETY				
S-1 RSG barges could create a marine traffic navigational hazard	Class III	RSG Transport	None	LTS
S-2 RSG transport could impede emergency response vehicles	Class III	RSG Transport, OSG Removal	None	LTS
S-3 Residual contamination would be present on the OSGs with the potential for radiation exposure during removal, staging, and transport for disposal	Class III	OSG Removal	None	LTS

^a Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial)^b LTS: Less than significant.

Table ES-4. Summary of Impacts and Mitigation for the Proposed Project

Impact	Impact Class ^a	Project Component	Mitigation Measure(s)	Residual Impact ^b
TRAFFIC AND CIRCULATION				
T-1 Transport of RSGs would result in public road closures and cause traffic delays	Class II	RSG Transport	T-1a Provide emergency vehicle access Mitigation Measure U-2a (above)	LTS
T-2 Staging and preparation activities would result in increased traffic on public roads	Class III	Staging/Prep	None	LTS
T-3 OSG removal and staging activities would result in increased traffic on public roads	Class II	OSG Removal	T-3a Schedule SONGS shift changes outside of peak hours	LTS
T-4 Transport of OSGs by rail could produce rail traffic delays	Class III	OSG Removal	None	LTS
T-5 Steam generator installation activities could produce traffic delays	Class II	RSG Installation	T-5a Schedule material deliveries outside of peak hours Mitigation Measure T-3a (above)	LTS
VISUAL RESOURCES				
V-1 Short-term view intrusion, view obstruction, or night lighting by RSGs and transporters during off-loading and transport	Class II	RSG Transport	V-1a Request decision on closure of San Onofre State Beach V-1b Provide advance notice of campground closure to prospective park visitors and campers V-1c Minimize night lighting near receptors in MCBCP Mitigation Measures L2-a and N1-a (above)	LTS
V-2 Potential long-term impacts to landscape and roadway within San Onofre State Beach	Class II	RSG Transport	V-2a Minimize disturbance to roadway and landscape within San Onofre State Beach	LTS
V-3 Visibility of temporary project-related facilities or activities within SONGS OCA and Mesa	Class III	Staging/Prep	None	LTS
V-4 Visibility of various project staging and preparation facilities or activities in the visual foreground of I-5 and San Onofre State Beach	Class II	Staging/Prep	V-4a Minimize or eliminate staging within the visual foreground of I-5 and San Onofre State Beach	LTS

^a Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial)^b LTS: Less than significant.

Table ES-5. Summary of Impacts and Mitigation for the Alternative Routes

Impact	Applicable Alternatives ^a	Impact Class ^b	Project Component	Mitigation Measure(s)	Residual Impact ^c
AIR QUALITY					
A-1 Replacement activities would cause emissions from transport and construction equipment	I-5 Route, MCBCP Route, Onsite Storage	Class II	RSG Transport, Staging/Prep	A-1a Suppress dust at all work areas or transport routes and on public roads A-1b Use low-emission transport equipment	LTS
A-2 Creating containment opening would cause substantial emissions of ozone precursors from portable engines	All Alternatives	Class II	OSG Removal	A-2a Use registered water pumping or power generation engines	LTS
BIOLOGICAL RESOURCES					
B-1 Transport of the RSGs could impact sensitive plants in order to avoid Skull Canyon	I-5 Route	Class II	RSG Transport	B-1a Conduct pre-transport sensitive plant surveys	LTS
B-6 Vessel traffic would increase the likelihood of collisions with protected marine mammals	I-5 Route, MCBCP Route	Class II	RSG Transport	B-6a Provide marine mammal observer training and trained observers	LTS
B-7 Vehicular travel into undisturbed areas on the Mesa could directly impact native vegetation as a result of the temporary facilities	Onsite Storage	Class II	Staging/Prep	B-7a Delineate disturbance limits on the Mesa	LTS
B-8 Temporary impacts to annual grassland and ruderal habitat from temporary pavement would occur in Segments L, N, Q, and F	I-5 Route	Class II	RSG Transport	B-8a Revegetation of temporarily disturbed areas	LTS
B-9 Transition through Segments AA and AC could cause impacts to waters of the U.S. or wetlands	MCBCP Route	Class II	RSG Transport	B-9a Complete jurisdictional delineation for waters and wetlands in Segments AA and AC	LTS
Impingement and entrainment would cease with the shutdown of SONGS	No Project	Class IV	N/A	None	Beneficial
Cooling water thermal discharges would no longer occur with the shutdown of SONGS	No Project	Class IV	N/A	None	Beneficial
CULTURAL RESOURCES					
C-1 RSG transport on the MCBCP Inland Route may damage or destroy previously detected cultural resources	MCBCP Route	Class II	RSG Transport	C-1a Avoid cultural sites along the MCBCP Inland Route	LTS

^a Key to Alternatives: I-5 Route = I-5/Old Highway 1 Alternative; MCBCP Route = Marine Corps Base Camp Pendleton Inland Route Alternative; Onsite Storage = OSG Onsite Storage Alternative.

^b Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial).

^c LTS: Less than significant.

Table ES-5. Summary of Impacts and Mitigation for the Alternative Routes

Impact	Applicable Alternatives ^a	Impact Class ^b	Project Component	Mitigation Measure(s)	Residual Impact ^c
GEOLOGY, SOILS, AND PALEONTOLOGY					
G-1 Extremely heavy loads could mobilize unstable ground along San Onofre Bluff area of transport route	I-5 Route	Class II	RSG Transport	G-1a Prevent overloading of unstable ground along transport route	LTS
G-2 Temporary effects of earthquake shaking could endanger worker safety	All Alternatives	Class II	All Phases	G-2a Protect workers from temporary effects of earthquake shaking	LTS
G-3 Temporary effects of earthquake-induced tsunami could endanger worker safety	I-5 Route, MCBCP Route	Class II	RSG Transport	G-3a Protect workers from temporary effects of tsunami	LTS
G-4 OSG Storage Facility construction activities could accelerate soil erosion	Onsite Storage	Class II	Staging/Prep	G-4a Prevent accelerated erosion during OSG Storage Facility construction	LTS
G-5 Unsuitable soil conditions could compromise integrity of the OSG Storage Facility	Onsite Storage	Class II	Staging/Prep	G-5a Prepare site-specific geotechnical investigation for OSG Storage Facility	LTS
G-6 Ground shaking could compromise integrity of the OSG Storage Facility	Onsite Storage	Class II	Staging/Prep	G-6a Prepare an updated Safety Analysis Report to accommodate the OSG Storage Facility	LTS
HAZARDOUS MATERIALS					
H-1 Heavy equipment fuel, oil, or hydraulic line leak or rupture could cause hazardous materials release	All Alternatives	Class II	All Phases	H-1a Implement SONGS and/or MCBCP spill response procedures H-1b Conduct routine inspections and maintenance of transporter	LTS
H-2 Heavy equipment maintenance could cause hazardous materials release	All Alternatives	Class II	All Phases	H-2a Properly handle maintenance waste	LTS
H-3 Previously unknown contaminated soil/groundwater could be encountered during construction	Onsite Storage	Class II	Staging/Prep	H-3a Stop work and notify appropriate project personnel and regulators	LTS
HYDROLOGY AND WATER QUALITY					
W-1 Offloading the generators at the Del Mar Boat Basin could disturb marine sediments or accidentally introduce contaminants to the ocean water	I-5 Route, MCBCP Route	Class III	RSG Transport	Mitigation Measures H-1a , H-1b , and H-2a (above)	LTS
W-2 Transport of the generators along the beach could result in contamination of beach or stream waters	I-5 Route, MCBCP Route	Class III	RSG Transport	Mitigation Measures H-1a , H-1b , and H-2a (above)	LTS

^a Key to Alternatives: I-5 Route = I-5/Old Highway 1 Alternative; MCBCP Route = Marine Corps Base Camp Pendleton Inland Route Alternative; Onsite Storage = OSG Onsite Storage Alternative.

^b Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial).

^c LTS: Less than significant.

Table ES-5. Summary of Impacts and Mitigation for the Alternative Routes

Impact	Applicable Alternatives ^a	Impact Class ^b	Project Component	Mitigation Measure(s)	Residual Impact ^c
LAND USE, RECREATION, AND MILITARY OPERATIONS					
L-1 Transport would disrupt an established land use	I-5 Route	Class III	RSG Transport	Mitigation Measures N1-a, V1-a, and V1-b (below)	LTS
NOISE AND VIBRATION					
N-1 Transport would temporarily increase local noise levels near sensitive receptors	I-5 Route, MCBCP Route	Class II	RSG Transport	N-1a Provide advance notice of offloading and transport N-1b Provide liaison for nuisance complaints	LTS
SYSTEM AND TRANSPORTATION SAFETY					
S-2 RSG transport could impede emergency response vehicles	I-5 Route, MCBCP Route	Class III	RSG Transport, OSG Removal	Mitigation Measures U-2a (above) and T-1a (below)	LTS
S-4 An aircraft accident could result in damage to the OSG Storage Facility with a subsequent release of radioactive material	Onsite Storage	Class III	Staging/Prep	None	LTS
S-5 A terrorist attack could result in damage to the OSG storage facility with a subsequent release of radioactive material	Onsite Storage	Class III	Staging/Prep	None	LTS
S-6 Seismic activity could compromise the integrity of the OSG Storage Facility	Onsite Storage	Class II	Staging/Prep	Mitigation Measure G-6a (above)	LTS
Probability of core-damaging accident would decrease with the decreased SONGS plant life	No Project	Class IV	N/A	None	Beneficial
Risk associated with spent fuel handling would decrease with the shutdown of SONGS	No Project	Class IV	N/A	None	Beneficial
Probability of an accident due to steam generator tube rupture would decrease with the decreased SONGS plant life	No Project	Class IV	N/A	None	Beneficial
Consequences of a terrorist attack would be reduced with the shutdown of SONGS	No Project	Class IV	N/A	None	Beneficial

^a Key to Alternatives: I-5 Route = I-5/Old Highway 1 Alternative; MCBCP Route = Marine Corps Base Camp Pendleton Inland Route Alternative; Onsite Storage = OSG Onsite Storage Alternative.

^b Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial).

^c LTS: Less than significant.

Table ES-5. Summary of Impacts and Mitigation for the Alternative Routes

Impact	Applicable Alternatives ^a	Impact Class ^b	Project Component	Mitigation Measure(s)	Residual Impact ^c
TRAFFIC AND CIRCULATION					
T-1 Transport of RSGs would result in public road closures and cause traffic delays	I-5 Route, MCBCP Route, Onsite Storage	Class II	RSG Transport	T-1a Provide emergency vehicle access Mitigation Measure U-2a (above)	LTS
T-2 Staging and preparation activities would result in increased traffic on public roads	Onsite Storage	Class III	Staging/Prep	None	LTS
T-3 OSG removal and staging activities would result in increased traffic on public roads	Onsite Storage	Class II	OSG Removal	T-3a Schedule SONGS shift changes outside of peak hours	LTS
T-5 Steam generator installation activities could produce traffic delays	Onsite Storage	Class II	RSG Installation	T-5a Schedule material deliveries outside of peak hours	LTS
Existing traffic would be reduced with the shutdown of SONGS	No Project	Class IV	N/A	None	Beneficial
VISUAL RESOURCES					
V-1 Short-term view intrusion, view obstruction, or night lighting by RSGs and transporters during offloading and transport	I-5 Route	Class II	RSG Transport	V-1a Request decision on closure of San Onofre State Beach V-1b Provide advance notice of campground closure to prospective park visitors and campers V-1c Minimize night lighting near receptors in MCBCP	LTS
V-1 Short-term view intrusion, view obstruction, or night lighting by RSGs and transporters during offloading and transport	MCBCP Route	Class II	RSG Transport	V-1c Minimize night lighting near receptors in MCBCP	LTS
V-4 Visibility of various project staging and preparation facilities or activities in the visual foreground of I-5 and San Onofre State Beach	Onsite Storage	Class II	Staging/Prep	V-4a Minimize or eliminate staging within the visual foreground of I-5 and San Onofre State Beach	LTS
V-5 Impacts to view corridor of I-5 due to ground disturbance, vegetation removal, or new paving	I-5 Route, MCBCP Route	Class II	RSG Transport	V-5a Restore ground disturbances in visual foreground of I-5	LTS

^a Key to Alternatives: I-5 Route = I-5/Old Highway 1 Alternative; MCBCP Route = Marine Corps Base Camp Pendleton Inland Route Alternative; Onsite Storage = OSG Onsite Storage Alternative.

^b Impact Classes: Class I (significant, unmitigable); Class II (less than significant with mitigation incorporated); Class III (less than significant); Class IV (beneficial).

^c LTS: Less than significant.